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ABSTRACT

This guide presents suggestions and materials for providing inservice training about assistive technology for parents and professionals working with infants and toddlers with or at-risk for disabilities. An introduction provides an overview and includes a variety of forms and surveys, a sample inservice agenda, and a list of workshop materials. The inservice program is divided into five strands. For each strand the guide identifies learning objectives, explains principles, suggests some activities, provides related handouts, and suggests additional resources. The strands are about: (1) Baby Tech--basic concepts; (2) family centered programs--the challenges and benefits of parent-professional partnerships in early intervention; (3) communication and language--the nature of communication and building the young child's language skills; (4) play--matching the child's needs and capabilities with toys and play situations; and (5) literacy--developing from birth the young child's four ways of communicating. An additional large section provides instructions and illustrations for making 28 adapted toys. Also included are two sections listing a variety of additional resources. (Contains 70 references.) (DB)

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TECH ITE SY

Technology for Infants and Toddlers made Easy

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Simon says,
"Raise your hands!"

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TECHNOLOGY FOR INFANTS AND TODDLERS MADE EASY

Written By
Debbie Reinhartsen, M.Ed., CCC-SLP, Editor
Clinical Center for the Study of Development and Learning
Campus Box # 7255, BSRC Building
University of North Carolina at Chapel Hill
Chapel Hill, North Carolina 27599
919-966-5171

Contributing Authors
Susan Attermeier, M.S., P.T.
Rebecca Edmondson, Ph.D.
Patsy Pierce, Ph.D.

JULY 1995

Illustrated by Leland E. Bailey

Funding for this project was provided by the North Carolina Department of Human Resources, Division of Developmental Disabilities/Mental Retardation/Substance Abuse and the North Carolina Department of Environment, Health, and Natural Resources, Division of Maternal and Child Health. We extend special thanks to Sue McLaurin for her support throughout this project.

PROJECT TECH IT EASY

Achieving independence may be particularly challenging and potentially compromised for young children who are at risk for, or have, developmental delays. Assistive technology is one means by which independence can be promoted in a variety of areas such as mobility, communication, self-care, and socialization. Self-proficiency can facilitate productivity and the integration of young children with special needs into inclusive community settings.

Several programs in North Carolina have been working to advance the development of assistive technology services for children aged birth through three years and their families. Collaboration among the seven assistive technology resource centers, the North Carolina Assistive Technology Projects (NCATPs), and Project IMPACT (Innovative Methods for Providing ACcess to Technology) currently provides services such as lending libraries, demonstration sites, pilot projects, data collection, and individualized training. Despite these combined efforts, additional needs exist for the training and development of partnerships among assistive technology consumers, their primary caregivers, and professionals. This project is designed to: (1) provide statewide training and technical assistance to young children through their primary caregivers and professionals in collaboration with the seven assistive technology resource centers and three regional early intervention training teams; (2) coordinate two statewide workshops, one on positioning and mobility with young children and the other on parenting a child with special needs; and (3) develop a replicable training module on the use of low technology with children aged birth through three who have assistive technology needs.

In summary, this project will extend the efforts of the seven assistive technology resource centers by providing additional training specific to the child, the child's family, and the professionals most closely involved in assistive technology efforts. The overall mission of this project is to advance the integration of assistive technology with the child's natural environment that includes home, school and community settings.

OBJECTIVES

(Insert slides # Intro 1 -# Intro 2)

- Parents and professionals will gain an understanding of underlying philosophies related to the provision of *light-tech* adaptation for infants and toddlers

- Parents and professionals will learn problem-solving techniques used to choose and use appropriate assistive technology

- Parents and professionals will gain hands-on experience with *light-tech* adaptations

ABOUT THIS GUIDE

This booklet contains suggestions and materials for providing inservice training about assistive technology in early intervention service delivery. The ideas presented in this booklet can serve as a guide and a resource for presenters. Each presentation, workshop, or other training experience should be individually designed, based on the presenter's knowledge, experience, and personality as well as the needs and characteristics of the targeted group of attendees. We strongly suggest that, prior to the training event, presenters try to determine each registrant's current level of understanding about, and familiarity with, the use of assistive technology in early intervention in addition to what those who will attend *expect* from the training. The most successful educational opportunities are those that make an impact on the way participants interact with families and children when they return to their service-delivery programs. The greatest impact can be made when training is geared to both the expectations and the needs of participants. An "Assistive Technology Comfort-Level Survey" is included in the Introduction Appendix (at the end of this section) as an example of how audience needs may be determined when planning for inservice training.

The "Assistive Technology Comfort-Level Survey" can also be readministered after a training event to evaluate the impact of the training on participants' attitudes and knowledge. Additional tools for evaluating presentation and workshop effectiveness (the "Workshop Evaluation Form" and the "Collaborative Back Home Plan") are also included for presenter use. The "Workshop Evaluation Form" is in a fairly standard format and is self-explanatory. The "Collaborative Back Home Plan" can be used for follow-up by the presenter to learn to what extent participants have implemented ideas from the training in their practice. The "Collaborative Back Home Plan" can be developed during the workshop by individuals or by teams of people who plan to work together. These plans should address the assistive technology goals the participants wish to achieve in their facilities and/or regions.

Quality Indicators Related to Early Intervention Inservice Training

According to the Southeastern Institute of Faculty Training (Winton & Catlett - 1992)[1], the following questions should be asked when planning and providing inservice training about any aspect of early intervention. We have tried to include these components in the planning, development, implementation, and evaluation stages of the "Tech IT Easy" workshops.

1. Is the training you are planning coordinated with your state's Comprehensive System of Personnel Development Plan (CSPD)?

2. Will you ensure that certification or licensure credits are available to all trainees who participate?

3. In planning and conducting this training, will you work as part of an interdisciplinary instructor team?

4. Will family members of children with disabilities (consumers of services) participate as part of the instructor team?

5. In terms of the target audience, will efforts be made to conduct "team-based" training, including as many of the parents and key professionals who work together on a team as possible?

6. Will efforts be made to attract an interdisciplinary audience (with at least three or more disciplines well represented)?

7. Will family members be involved as participants?

8. Will the training be actively endorsed and/or attended by administrators?

9. Will experiential activities and modeling/demonstration opportunities be provided as a part of the training?

10. Will handouts be provided (for review of content by trainees at a later time)?

11. Will training strategies be varied and sequenced in such a way as to meet the needs of different learning styles?

12. Will training strategies be used for applying the training ideas to the workplace?

13. Will trainees identify specific ideas/practices they desire to try in the workplace (an action plan)?

14. Will ongoing support, monitoring, or technical assistance be provided to trainees?

15. Will the actual impact of training on practices be measured or evaluated?

Planning Your Training Event

The following tables, timelines, and objective-specific forms were found to be useful in planning the "Tech IT Easy" workshops. Samples of the following such forms are included in the Introduction Appendix at the end of this section:

* Assistive Technology Comfort Level Survey
* Timeline for Tech IT Easy (Aug. 8 - Nov. 30)
* Technology for Infants and Toddlers Made Easy (agenda for training staff)
* Workshop Make and Take Centers (materials for one workshop)

- Workshop Materials Needed (for all three workshops)
- Flyer announcement of Tech IT Easy workshop series
- Tech IT Easy Agenda for Workshop Participants
- Participant Sign-In Sheet
- Participant Demographic and Satisfaction (evaluation sheet)
- Back Home Plan
- Tech IT Easy Specialist Certificate
  (given to all participants upon completion of the workshop)

It is our hope that this guide will assist presenters in the planning, implementation, and evaluation of a successful inservice training about assistive technology in early intervention service delivery. Keep in mind that each presentation should be individually designed, based on the presenter's knowledge and experience as well as the needs of the targeted audience.

Reference

1. Winton, P.J. & Catlett, C. (1992). ***The Southeastern Institute for Faculty Training (SIFT)***. Chapel Hill, North Carolina: The University of North Carolina at Chapel Hill.

INTRODUCTION APPENDIX

1. Assistive Technology Comfort Level Survey

2. Timeline for Tech IT Easy (Aug. 8 - Nov. 30)

3. TECHnology for Infants and Toddlers Made EASY (agenda for training staff)

4. Workshop Make and Take Centers (materials for one workshop)

5. Workshop Materials Needed (for all three workshops)

6. Flyer announcement of Tech IT Easy workshop series

7. Tech IT Easy Agenda for Workshop Participants

8. Tech IT Easy Workshop - Participant Sign-In Sheet

9. Participant Demographic and Satisfaction (evaluation sheet)

10. Back Home Plan

11. Tech IT Easy Specialist certificate (given to all workshop participants)

Assistive Technology Comfort Level Survey

(adapted from Office of Maternal & Child Health Early Intervention Program, Charleston, WV)

Please rate your comfort level on the following aspects of early intervention assistive TECHNOLOGYusing a scale of 1 to 5.

(5 = Very Comfortable; 3 = Somewhat Comfortable; 1 = Not at all Comfortable)

1. _____ Writing functional IFSP goals which include assistive technology
2. _____ Interviewing families to determine resources and needs for assistive technology services
3. _____ Collaborating with other agencies
4. _____ Providing consultation/other follow-up services
5. _____ Teaching children, families, service providers to use assistive technology
6. _____ Providing workshops, technical assistance, and other forms of group-oriented education in assistive technology devices and use
7. _____ Developing and implementing public awareness programs
8. _____ Providing family-centered assistive technology services
9. _____ Developing and/or supporting transition plans which include assistive technology for children after their third birthday
10. _____ General awareness of assistive technology options and devices
11. _____ General use of assistive technology
12. _____ Choosing equipment for classroom (preschool/day-care setting)
13. _____ Choosing equipment to be used at home
14. _____ Helping families to find the best equipment for their child
15. _____ Ordering equipment (knowing how and where to purchase)
16. _____ Adapting toys (choosing, adapting, using)
17. _____ Adapting furniture for better positioning
18. _____ Deciding which augmentative communication system to use

19. _____ Determining vocabulary for augmentative communication systems

20. _____ Programming augmentative communication systems

21. _____ Teaching others to use augmentative communication systems

22. _____ Using computers with children: ___ 0-3 ___ 3-5

23. _____ Determining appropriate access to computers

24. _____ Connecting peripherals to computers

25. ___ Developing/using appropriate setups for computer software

26. _____ Selecting software to meet a child's needs

27. _____ Ordering software

28. _____ How and when to use computers to meet IFSP goals

29. ____ Problem-solving computer breakdowns

30. ____ Determining whether a child is positioned properly

31. ____ Achieving positioning through assistive technology

32. ____ Deciding when a child should get a wheelchair

33. _____ Selecting appropriate positioning and mobility equipment

34. _____ Working on mobility

Timeline for Tech IT Easy
August 8 - November 30, 1994

Goal	Elaina	Debbie/Becky	Due Date	Date Completed
Advisory Board				
Advisory board meeting			**October 3**	
• poll advisory board members for date	September 6			
• make reservations at Nick's Cuisine (lunch arrangements)	September 13			
• agenda		September 22		
• confirmation letter to board members (date, time, location, agenda)	September 26			
Training				
Site selection (AV/catering/room setup)			**September 14**	
• Greenville				
• Greensboro	September 14			
• Asheville	September 12 (Radisson)			
Recruit participants			**October 17**	
• order mailing labels	September 13			
• create flyers		September 16		
• fold/stuff/mail flyers	September 26			
• receive participant registrations	ongoing			
• acknowledge registrations (map/agenda/memo)	ongoing			
Hotel accommodations	**September 16**			9/19/94
Reserve van from motorpool	**September 12**			9/12/94
Workshop materials				
• prepare handouts Greenville Greensboro Asheville		 October 17 October 24 November 7		
• make nametags Greenville Greensboro Asheville	 October 21 October 31 November 11			
Demonstration materials			**October 24**	
• receive material list from Patsy		September 12		
• all materials purchased	September 16	September 16		
• supplies to Dad		September 17		

• adaptations completed		October 23		
Inventory list for workshops	**October 24**			
Resource list			**October 17**	
• labels for toys	October 24			
Training module				
Determine format, content, presentation style, photo needs		**September 12 October 3**		
• preliminary formatting for demo items	ongoing			
• contact UNC printing (Glenn Haugh) to explain project		September 19		
• contact photographer to explain project		September 19		
• begin photo shoot		September 20		
Module draft		**October 28**		
• module outline		October 10		
• first draft		October 24		
• draft to printing for artwork	October 25			
• return drafts to authors		October 31		
• final draft due		November 11		
• artwork completed		November 11		
• final draft to printing for production	November 18			
• visual supplements	November 18			
• distribution to participants	November 28			
Parent conference			**November 19**	
Site selection		**September 14**		done
• date		September 14		
• room setup		September 14		
• catering		September 14		
• child care		September 30		
Flyer		**October 10**		done
• printing		October 12		
• mailing labels		September 20		
• mailings		October 19		
Budget		**September 14**		
Consultant fee		**September 14**		done

TECHnology for Infants and Toddlers Made EASY
AGENDA

TIME	TOPIC	PERSON RESPONSIBLE
7:30 a.m. - 8:30 a.m.	**Room setup**	Becky, Debbie and Patsy
8:30 a.m. - 9:00 a.m.	**Meeting and Eating (pre-test)**	caterer
9:00 a.m. - 11:00 a.m.	**Making Environments Responsive** Welcome • introductions (brief ice-breaker) *staff and participants* • project description • training objectives • *slide show* BABY TECH Philosophy (slide) • family involvement vignette IFSP goals (Amy video) • vocabulary selection family-centered augmentative communication symbolism script development sample overlays • voice output to play	Becky, Debbie and Patsy
11:00 a.m. - 11:15 a.m.	**Break**	caterer

11:15 a.m. - 12:15 p.m.	**Choosing and Using Assistive Technology with Young Children** • Toy quality - what you look at when you purchase a toy • Levels of play • Positioning • Household adaptations • Toy adaptations • IFSP goals	Susan
12:15 p.m. - 1:00 p.m.	**Lunch**	caterer
1:00 p.m. - 1:45 p.m. 1:45 p.m. - 2:30 p.m.	**Emergent Literacy** **Team Collaboration** • group activity (puzzle) importance of teams valued local resource back home plans • toy activity (one toy per group) • sharing resources backhome plans	Becky and Patsy
2:30 p.m. - 2:45 p.m.	**Break**	caterer

2:45 p.m. - 4:00 p.m.	**Making and Taking Assistive Technology** • literacy center • adaptive switch center • Play-It Say-It center • access center • goose video (EVALUATION AND POST-TEST)	Becky, Patsy, Debbie and Susan

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Workshop Make and Take Centers (materials for one workshop)
(revised 10/20/94)

Literacy Center	Say It Play It	Alternative Switches	Access Center
materials: • project ATTRACT notebooks (10) • sheet protectors (150) • cardboard for sheet protectors (150) • hook velcro (20ft. stickyback - 2 ft. strips each person) • carpet square for demonstration • 30 literacy overlays on label paper (three per person) • *20 Mercer Mayer "I Was So Mad" paperback books • self-adhesive felt • 10 childrens' board books • 150 popsicle sticks **tools:** • Elmer's (3) • scissors (5)	**materials:** *(10 of each)* • Hallmark recordable card • audio cable 42-2472 • 9 volt battery • DPDT 12 volt relay 275-249 • battery snap conn. 270-325 • 24 guage wire • butt connectors 064-3073 • flex ties **tools:** • wire stripper (5) • crimper /wire cutter (3) • masking tape (1) • hot glue gun • glue sticks	**materials:** *(10 of each)* • magnetic reed relay 49-497 • audio cable 42-2454 • connectors 64-3073 • 3 1/2 x 5" plastic picture frame • foam • plug adaptor • electrical tape **tools:** • wire stripper • crimper/wire cutter (2) • hot glue gun (5) • glue sticks • masking tape (1) • scissors (5) • awl	**materials:** • ponytail holders (10) • hook velcro (20ft. stickyback - 2ft. strips per person) • *favorite toys • *toy car • clothespins (10) • markers for demo • PVC pipe pieces • elbows • tees • furniture tips (20) • tights (10) • fiberfill (2 bags) **tools:** • hot glue gun (5) • glue (5) • Elmer's (2) • scissors (5)

*parents have been asked to bring

- **Workshop Materials Needed (for all three workshops):**

Purchase:	Other:	Participants:
• sheet protectors (500) • 500 sheets of cardboard for sheet protectors • hook velcro (120ft stickyback) • label paper (100 sheets) • 40 Mercer Mayer books (2 each) • self-adhesive felt • small children's board books (30) • popsicle sticks (450) • 3x5 plastic picture frames (30) • RS foot pedals (30) • plug adapters 1/32" to 1/8" (30) • photo relay (1) • photo relay power source (1) • reflectors (9) • roll of 24 guage wire • 12 "AA" • 24 "C" • ponytail holders (30) • clothespins (30) • furniture tips (70) • PVC pipe • tees • elbows • tights (30) • fiberfill (9 bags) • glue (5) • hot glue sticks (10 sticks) • masking tape (2) • NCR paper (130 sheets) 3-copy • soda (100 assortment)	• ATTRACT notebooks (30 for centers) • all extra ATTRACT notebooks • literacy overlays (10x3x3) • foam • set of markers for demonstration (thin) • awl • glue guns (10) • glue sticks • wire stripper/cutter (10) • crimper (5)? • scissors (15) • plastic bags from Papertown	• favorite lightweight toys to which velcro may be attached • small plastic car to be adapted as a writing tool • two copies of a favorite repeated line paperback children's book such as Mercer Mayer's "I Was So Mad" • crimpers • hot glue guns

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The University of North Carolina at Chapel Hill
Clinical Center for the Study of Development & Learning
and
The N.C. Division of Maternal & Child Health

Present

Tech It Easy

Technology for Infants & Toddlers Made Easy

1994 Workshop Dates are:
October 28 - Greenville, NC at the Agricultural Center
November 7 - Greensboro, NC at the Coliseum Complex
November 18 - Asheville, NC at the Biltmore Radisson

WHO SHOULD ATTEND THIS WORKSHOP?

Tech It Easy is a workshop for **Parents, Day Care Providers, & Home Early Interventionists, Assistive Technology Resource Center and DEC Staff** who work with children with special needs ages Birth - Three.

GOALS OF THE WORKSHOP

This is a **beginners' level workshop** that will provide the participant with:

1. an understanding of how assistive technology can be used in a child's environment;
2. hands-on experience making simple assistive technology (light tech) adaptations;
3. team training on how to become a valuable resource within your community.

REGISTRATION

This is a FREE Workshop. By registering you are making a commitment to participate. These workshops are limited to 40 participants each. Please sign up by using the attached form and feel free to copy it for a friend. You will receive confirmation of your registration upon receipt.

INFORMATION

For more information please call Debbie Reinhartsen or Rebecca Edmondson (919) 966-5171.

REGISTRATION FORM **Complete registration form and mail to:**
Elaina Cossin, CDL, CB# 7255, BSRC, UNC-CH, Chapel Hill, NC 27599-7255

Please Print
Name _____ Title/Degree _____

Employed by: _____

Address _____

City _____ State _____ Zip _____

Daytime Phone # _____ Evening Phone # _____

I plan to attend the workshop on: ☐ **October 28** ☐ **November 7** ☐ **November 18**
I am a ☐ **Parent /** ☐ **Day Care Provider /** ☐ **Home Early Interventionists /** ☐ **from a Assistive Technology Resource Center /** ☐ **DEC Staff**

TECH IT EASY

Technology for Infants and Toddlers Made Easy

AGENDA

8:30 a.m. - 9:00 a.m.	Meeting and Eating
9:00 a.m. - 10:45 a.m.	Making Environments Responsive
10:45 a.m. - 11:00 a.m.	Break
11:00 a.m. - 12:15 p.m.	Choosing and Using Assistive Technology with Young Children
12:15 p.m. - 1:00 p.m.	Lunch
1:00 p.m. - 1:30 p.m.	Team Collaboration
1:30 p.m. - 2:45 p.m.	Making and Taking Assistive Technology
2:45 p.m. - 3:00 p.m.	Break
3:00 p.m. - 4:30 p.m.	Sharing What We've Learned

TECH IT EASY WORKSHOP

Radisson Hotel Asheville
November 18, 1994

PARTICIPANT SIGN IN SHEET

Please print your name, address, and home phone number in the space provided on the left; then sign your name on the right - next to your printed name. Thank you.

NAME, HOME ADDRESS, AND HOME PHONE **SIGNATURE**

ID# _____ State _____ Date _____

(Please use last 4 digits of your Social Security #)

Participant Demographic and Satisfaction

Please circle the highest degree earned.

1) High School 2) Associate 3) Bachelor's 4) Master's 5) Doctorate

Place the appropriate Discipline Code(s) in the space(s) following the highest degree earned.

1) Associate ____/____ 2) Bachelor's ____/____ 3) Master's ____/____ 4) Doctorate ____/____

Discipline codes:

01 Audiology	07 Nursing	13 Special Education
02 Child Development	08 Nutrition	14 Speech/Language Pathology
03 Education	09 Occupational Therapy	15 Other (specify)_____
04 Early Childhood Education	10 Physical Therapy	
05 Early Childhood Special Education	11 Psychology	
06 Medicine	12 Social Work	

Are you the parent of a child with a disability? 1) Yes 2) No

Number of years experience parenting a child with a disability?

1) Not applicable 2) less than one year 3) 1 to 3 years 4) 4 to 6 years 5) 7 to 10 years 6) 11 or more

Number of years experience in early intervention?

1) less than one year 2) 1 to 3 years 3) 4 to 6 years 4) 7 to 10 years 5) 11 to 15 years 6) 16 or more

How well did you:	Not at all		Some extent		Great extent
1. Understand the topic *before* the session?	1	2	3	4	5
2. Understand the topic *after* the session?	1	2	3	4	5
To what extent :					
1. Was the material well presented?	1	2	3	4	5
2. Was the content useful to you?	1	2	3	4	5
3. Would you recommend this experience to others?	1	2	3	4	5
Overall how do you evaluate the day?	Poor 1	Below Average 2	Average 3	Above Average 4	Excellent 5

For me, the most useful part of today's events was?

For me, the least useful part of today's events was?

What information other than what was presented would you have liked included?

What changes would have made the day's events more effective for you?

Additional comments/concerns: (please use back if necessary)

TD 7/28/93

BACK HOME PLAN

Instructions: *In the spaces provided, develop a plan of action for yourself which details what you intend to do as a result of this workshop. Write goals that are clear, specific and action oriented. Next, think of the steps involved in accomplishing these goals. Then, think of people and resources that might help you in reaching these goals. Finally, decide on a timeline for accomplishing your goal.*

Goal I want to achieve: _____

Date by which I want to achieve this goal: _____

TEAM GOAL	*Steps to take*	*Resources and people who could help me accomplish this step*
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____

Goal I want to achieve: _____

Date by which I want to achieve this goal: _____

PERSONAL GOAL	*Steps to take*	*Resources and people who could help me accomplish this step*
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____

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TECH IT EASY SPECIALIST

Awarded to

For Providing Assistive Technology Options to Infants and Toddlers and their Families

Presented by

The CDL and DHR, DD Section

Friday, November 18, 1994

Debbie Reinhartsen
Debbie Reinhartsen

Becky Edmondson
Becky Edmondson

Patsy Pierce
Patsy Pierce

Susan Attermeier
Susan Attermeier

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Make It & Take It

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ABOUT THE AUTHORS

Susan Attermeier, M.S., P.T., is a physical therapist who has worked with infants and toddlers with special needs for the past 20 years. In addition to providing physical therapy services, Susan is currently a doctoral student in early intervention at the University of North Carolina at Chapel Hill.

Rebecca Edmondson, Ph.D., holds a doctorate in school psychology. She currently is a pediatric psychologist at the Clinical Center for the Study of Development and Learning (CDL) at the University of North Carolina at Chapel Hill and works with young children and their families. Prior to graduate school, Becky was a kindergarten teacher.

Patsy Pierce, Ph.D., holds a doctorate in early childhood special education and literacy from the University of North Carolina at Chapel Hill. She is currently the State Assistive Technology Consultant for the Infant-Toddler Program, North Carolina Department of Human Resources, Division of Mental Health, Developmental Disabilities, and Substance Abuse Services. Patsy is a speech-language pathologist who has worked with children with severe speech and physical impairments for the past 13 years.

Debra Reinhartsen, M.Ed., CCC-SLP, is the speech-language pathologist for the infant and preschool teams at the Clinical Center for the Study of Development and Learning. She has worked with children with multiple disabilities for the past 13 years and has been the project director for two training grants whose focus was the use of assistive technology with infants and toddlers.

* * * * * * * * * * * * * *

The editor wishes to acknowledge the contributions of those without whom this project could not have been completed. Special thanks go to Sue Turi and Jill Ullman for typing, formatting, and proofreading assistance; to Leland E. Bailey for his time, technical expertise, and illustrations; to Dan Crawford for his professional photography skills; to Brian Bolt, for his videotape production and editing skills; and to Sonny Johnson, for his adapted devices with directions for their construction.

BABY TECH: GREAT BEGINNINGS WITH INFANTS, TODDLERS, THEIR FAMILIES, AND ASSISTIVE TECHNOLOGY

OBJECTIVES

After completing this strand, participants will have:

- an understanding of the basic concepts that underlie providing assistive technology as a part of early intervention services
- developed skill in finding no-tech and low-tech alternatives

What do babies do? They spend most of their time sleeping, eating, or crying, but when they are awake they are also looking, listening, and moving. Overall, they are learning about themselves and the world around them.

What do babies need? They need love and care plus opportunities *and* means to do what they want to do. Assistive technology in early intervention is a fancy term for any item that can help babies to do what they want to do. For example, perhaps a baby wants to move a little more easily, a little more often, and with a great deal more enjoyment. No-tech, low-tech, or high-tech assistive technology can help babies do what they want and need to do as easily and as independently as possible.

This strand provides people who do training or education about assistive technology in early intervention with some basic concepts to share.

These important fundamentals have been arranged to form the acronym BABY TECH to help audiences (and instructors!) remember them. These ideas should be considered whenever choosing and using the wide variety of adapted toys and assistive devices for children from birth to three years of age.

We suggest that presenters show and discuss the videotape, *Assistive Technology Opportunity and Expectations: Accessing AT Services - Birth to Three* (Chapel Hill Training-Outreach Project, 1995) before talking about BABY TECH fundamentals. Some participants at your training session may need this overview about types and uses of assistive technology before engaging in detailed discussions.

(Insert slide = BT 1)

BABY TECH

Be family centered.
Aim for communication (listening, speaking, reading, and writing).
Bring voice output to play.
Yuck! Wires! Go wireless.

Technology is a tool. Teamwork is a must.
Environmental control means early communication.
CHildren first. Treat children as exceptional only when necessary.

BABY TECH spells out the fundamental concepts that should be considered when choosing and using assistive technology with other aspects of early intervention services. Presenters may wish to use the pertinent overhead transparency/slide masters pro-

vided with this section when explaining the basics in more detail.

- **Be Family-Centered**. We realize that the most effective early intervention services are those that are requested or endorsed by a child's family. Families know best what they and their children need to function as effectively and independently as possible. Family functioning has direct impact on each child's developmental outcome. Therefore, a family's desires, needs, and strengths must drive all aspects of early intervention service delivery, especially when choosing and using assistive technology devices. For example, even the best wheelchair or positioning device on the market is useless if it cannot fit into a family's living space. Communicating and working with families is discussed and relevant resource information is provided in *Strand 2: Be Family-Centered*.

- **Aim for Communication**. Why do we use adapted toys, special switches, devices that talk, and other pieces of equipment that fall under the term *assistive technology*? One reason we begin to offer babies this type of assistance at a very early age is to help promote each child's communication skill development and prevent delays. Certain types of assistive technology, called augmentative communication devices, help children express their wants and needs when they are having difficulty communicating. Listening and talking are only two of the ways in which individuals communicate. Assistive technology can help young children with special needs develop their early reading and writing skills, too. *Strand 3: Aim for Communication* and *Strand 5: Aim for Literacy* offer pertinent information and training strategies for presenters to share with workshop participants.

- **Bring Voice-Output to Play**. Making communication boards and toys "talk" appears to increase a child's motivation to use both. Children may easily tire of a switch toy that can only make a noise or spin around when activated. If this toy also expresses a meaningful message such as "Look at me" or "This is fun!" a child is more likely to hit the switch again and again, *especially* when an appropriate response is also elicited from an adult or a peer. [This is a good point in the presentation at which to demonstrate the "Say-It-Play-It©," a mechanism that attaches a ten-second message to any toy or device.] In this way, toys and other devices can be enhanced with meaning, interactive messages, music, or other sounds for children who are more auditory in their learning style (e.g., children who are visually impaired). The "Say-It-Play-It©" can be made during a "Tech IT Easy" workshop. A training videotape and directions for making this device are included in this package.

- **Yuck! Wires!** When a baby crawls on the floor and you put a switch toy in front of him, what does he usually reach for? The toy? The switch? No, usually the wires! We want babies to become engaged with the action and message of the toy they are controlling. Unfortunately, it's normal for little ones to grab and chew on wires, which distracts them from the learning experience and the real fun. "Eye-In-the Sky©" is one approach to getting rid of the wires

associated with switch toys. This wireless switch has been devised from a burglar alarm that is activated when an infrared beam is broken. Babies can be enticed to break this beam and activate a motivating toy and message by crawling, walking, or just raising their head, arms, or legs. Another type of wireless switch is the magnet switch, also made with a burglar alarm system. This type of switch enables children to activate devices by placing magnets at or near a desired location. Both of these switches can be made during a "Tech IT Easy" workshop. Directions are included with this training package.

- **Technology as a Tool**. Use of assistive technology should never be considered an end in itself, but rather a means by which functional, developmental skills may be attained. For example, an IFSP goal should never just state that "Amy will use a computer," but specify that "Amy will join in singing songs during morning circle time by using a computer, an adaptive switch, and appropriate software." Assistive technology acts in the same way as the pencil that helps us communicate through writing and the musical instrument that helps us express ourselves through music. It serves as a vehicle through which babies can learn, function independently, interact, and have fun!

- **Teamwork is a Must**. We know that "two heads are better than one" and that it often takes several service providers working collaboratively with a family to provide optimal early intervention services. Teamwork is especially important when determining assistive technology needs and options because many of the children who can benefit most from assistive technology have multiple impairments.

- **Environmental Control Means Early Communication**. Babies need to learn that they are separate from their environments and that they can control many aspects of their surroundings. They instinctively attempt to exert control, for example, by crying to get mom or dad to pick them up or by kicking their legs to get a mobile to swing. If the appropriate response is elicited, babies' first sounds and movements become early signals for communicating how they feel as well as what they want and need. We should remember the following "three Rs" when helping babies learn to control their environments and to communicate:

  1. *Recognize* that the baby is sending out a signal (crying, squirming, closing eyes).
  2. *Read* what the baby is trying to communicate ("I want more" or "I don't like this").
  3. *Respond* appropriately and consistently.

  An environment that includes people, toys, and other items that respond quickly and consistently to a baby's movements and sounds will foster learning about communication and control.

- **Children First**. The final underlying concept for providing early intervention assistive technology services is to remember that these children are just that --- children first. They may benefit from using typical toys that other

children like. They should, if caregivers wish, be supported to attend regular daycare centers. We endorse the motto "only as special as necessary" when thinking about what options best meet the needs of children who qualify for early intervention services. No-tech or very low-tech options should be tried first to help babies learn, communicate, and act as independently as possible. *Strand 4: Play* provides training materials for choosing and using no-tech/low-tech options. These may be the most comfortable choices for families of young children as they get started in early intervention and begin using assistive technology. The following goals can serve as a guide for selecting "children first" options:

1. Have high expectations. Low expectations for independence and development can lead to more intrusive/less inclusive interventions and, in turn, to less positive outcomes for children.

2. Provide early intervention services in natural settings (home and community).

3. Use natural supports (neighbors, community members, etc.) to help provide early intervention services.

4. Involve families as partners in creating, planning, and implementing early intervention programs.

5. Maximize collaboration among all agencies working with children.

6. For very young children, provide related services (OT, PT, SLP) in natural settings.

7. Arrange early intervention groupings to reflect the natural proportions within society (approximately three children with special needs in a group of ten).

References

Burkhardt, L. (1993). **Total augmentative communication in the early childhood classroom.** 6201 Candle Court, Eldersburg, MD 21784.

Goosens, C., Crain, S., & Elder, P. (1992). **Engineering the classroom environment for interactive symbolic communication: An emphasis on the developmental period, 18 months to 5 years.** Southeastern Augmentative Communication Conference, 2430 11th Avenue North, Birmingham, AL 35234.

King-Debaun, P. **Story Time** products, Don Johnston, Inc. (see below).

National Parent Network on Disabilities, **Free Toy Guide from Toys R Us**, 1600 Prince Street, #115, Alexandria, VA 22314.

Pierce, P.L. (Ed.) (1993). **Baby Power: A guide to using assistive technology with infants and toddlers.** Raleigh, NC: DHR. Available from the Center for Literacy and Disability Studies, CB #8135, UNC-CH, Chapel Hill, NC 27599, 919-966-7486.

Don Johnston, Inc. 800-999-4660: Books like **Quick Tech Activities for Literacy** and **Readable, Repeatable Stories** by Peggy McNairn and Cindy Shioleno.

Mayer-Johnson, Inc. 619-550-0084: Books like **Hands On Reading** by Jane Kelly and Teresa Friend and **The Preschool AAC Checklist** by Judy Henderson.

STRAND 1 HANDOUT

1. "Tech IT Easy:" Assistive Technology for Infants and Toddlers Made Easy

Tech It Easy: Assistive Technolgy for Infants and Toddlers Made Easy

Rebecca Edmondson & Debbie Reinhartsen, Center for Development and Learning, UNC-Chapel Hill

Patsy Pierce, N.C. Department of Human Resources

Susan Attermeier, LPT, Private Practitioner

Underlying Philosophies

Be family-centered: What can we do to help the family?

AIM for communication, literacy, inclusion: Access, Interaction, Modeling

Bring voice-output to play

Yuck! Wires! Go wireless: Magnetic reed contact switches (Radio Shack Part #49-497); Optical Switch (Radio Shack Safe House Products)

Technology as a TOOL! Use devices and computers to accomplish real tasks. All preschools should have exploration, tool, and story software.

Teamwork is a must: Interdisciplinary and interagencies linkages

Environmental control=early communication

CHildren first! Only as special as necessary-No tech first option, light tech next option

Emergent Literacy Skills: Functions and Concepts of Print; Phonemic Awareness; Decontextualized language; Print-Speech Relationship; Drawing/Writing Development

Acccess: • Page fluffers (pieces of weather stripping, sponge, carpet padding on pages); page tabs (popsicle sticks); • Instant baby book: buy two copies or Xerox and place books in photo albums or in sheet protectors in a binder-add cardboard for thickness; • Put Velcro on books to hold to carpet, book holders; • Videotape books and show on a 4-Head VCR, adapt a remote control for independent access; • Put books on slides and adapt slide projector; • Buy books on computer disk and CD-ROM, read computer stories with babies while holding them on your lap and assist them to activate buttons!

• Let kids choose books, read them they're favorites-over and over and over!

• Make books about kids with their pictures in them.

• Hot glue magic markers to toy cars including adapted remote control cars for early writing and drawing; • Use adapted holders and chalk board surfaces (Hach & Associates); • Use computer peripherals and early drawing software.

Interaction: • Add Voice out put and sound effects to play: Use Hallmark Card chips (cut wires between circuit board and switch and solder to wires leading to a female jack or to a Magnetic Reed Contact Switch). • Or-have other digitized devices (e.g., Speak Easy from Ablenet; The Hawk from Adamlab; the Message Mate from Words Plus; the Alpha Talker from Prentke Romich) attached to switch operated toys via the Spider Box (ask Sonny Johnson). • Always have some way for a child to participate during reading and writing activities: eye-gaze, voice output, gestures. • Relate what's being read to the child's experiences and read, paraphrase, and choose text at child's language level. 1-3 lines of print, and predictable, repeatable stories good for birth through three population!

Modeling/Mediation: Show, talk, and play with children about how reading and writing can be used to accomplish real tasks: e.g., cooking, order pizza, watching T.V.!

Baby Tech Resources

Burkhardt, L. (1993). Total augmentative communication in the early childhood classroom. 6201 Candle Court, Eldersburg, MD, 21784.

Goosens', C.., Crain, S., & Elder, P. (1992). Engineering the classroom environment for interactive symbolic communication: An emphasis on the developmental period, 18 months to 5 years. Southeastern Augmentative Communication Conference, 2430 11th Ave. North, Birmingham, AL, 35234.

King-Debaun, P. Story Time products, Don Johnston, Inc. (see below).

National Parent Network on Disabilities, 1600 Prince Street, #115, Alexandria VA 22314, Free Toy Guide from Toys "R" Us.

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Don Johnston, Inc. 800-999-4660: Books like Quick Tech Activities for Literacy and Readable, Repeatable Stories by Peggy McNairn and Cindy Shioleno.

Mayer-Johnson, Inc. 619-550-0084: Books like Hands On Reading by Jane Kelly and Teresa Friend and the Preschool AAC Checklist by Judy Henderson.

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BE FAMILY-CENTERED

OBJECTIVES
By completing this strand, participants will:

- gain increased awareness of the challenges and benefits of parent-professional partnerships in early intervention
- consider individual characteristics of professionals and parents that promote effective partnerships

While most people involved in early intervention agree with the collaborative spirit of IDEA (Individuals with Disabilities Act: 1991), usually neither the parents nor the professionals who take part in such collaborations have been prepared for the roles they are expected to play or trained to work as effective team members. While most professionals have opportunities to practice these skills and gain experience on the job, parents are often thrust into the team situation with little warning, preparation, or assistance. Moreover, parents are frequently asked to participate on a variety of teams during the intervention process, so the composition of the teams on which families participate changes and collaborative relationships typically take time to develop. We acknowledge the importance of a child's ability to communicate. We must also recognize the importance of effective communication between a child's parents and professionals working with the child.

SNOWFLAKE ACTIVITY

1. Give each participant a blank sheet of paper.
2. Give the following directions (*do not answer questions at this point*):

   a. Fold your paper in half and tear off the top right corner.

   b. Fold your paper in half again and tear off the bottom left corner.

   c. Fold your paper again and tear off a corner.

   d. Open your papers. Since everyone received the same instructions, one might expect all snowflakes to look the same. Compare yours to the one made by the person next to you.

3. Ask what this activity illustrates about communication.

When asked what qualities are necessary to establish rewarding and productive working relationships, both parents and professionals list similar traits. Examples include good listening skills, caring, open-mindedness, assertiveness, flexibility, acknowledgment of one another's expertise, and hard work.

The multidisciplinary evaluation is one of the first early intervention system contacts a family may have and it can be a very emotional, trying time for both the family and professionals. Often the family's main role during the evaluation is simply to provide information to team members. The team, in turn, attempts to establish a diagnosis and/or the child's eligibility for early intervention services. This can be a wonderful opportunity to establish positive relationships and to help families become team members, but it can often be such an emotional and novel time that a family is less

active than they would like to be or will become in subsequent situations. So, this is a good time for professionals to share information with parents about their legal rights and the importance of the intervention process for their child.

(Insert slides # FC 1 - # FC 9)

The next major step for families is writing the Individualized Family Service Plan (IFSP). At this point, communication becomes critical in setting realistic goals for the child. It will be essential in ascertaining family resources, establishing time-lines and evaluation criteria, and, perhaps most importantly, in determining the manner in which services will be implemented. While this stage of the process can be difficult and is often the first point of conflict between families and professionals who may disagree on a particular goal, it can also be an important step in building a productive relationship between families and early interventionists.

(Insert video vignette of the IFSP meeting, which is available through North Carolina ATRCs)

When writing assistive technology goals for young children with special needs, it is important to remember that the goals must reflect the developmental or educational skills that the team is striving to develop or improve. The assistive device or equipment should only be used a means to an end, not as the goal of the IFSP. For example, if the team feels that a child with language and motor impairment might benefit from a device such as a Shadow Box Talker, it will be important to stress that the reason for using a Shadow Box Talker is to enable the child to participate in interactive games or to request help with certain activities.

In summary, working with families in early intervention can be a very rewarding experience for all team members. However, it can also be a very challenging time and requires constant effort and attention to the impression each encounter may have upon individual families and team members. It is important to remember that the ultimate goal in all early intervention efforts is to promote the optimal development of each child. This is accomplished by maximizing independence and productivity for children and their families.

Reference

1. ***Delivering Family-Centered, Home-Based Services (1991).*** Videotape. Project Copernicus, Kennedy Krieger Community Resources, Baltimore, MD.

STRAND 2 HANDOUTS

1. Questions to Ask to Help Generate the IFSP

2. Guidelines for Writing Family-Centered IFSPs

Questions to Ask to Help Generate the IFSP

From Pam Winton

Goals:

- If you were to focus your energies on one (or two) thing(s) for (child), what would it be?
- If you could change one thing about (above named event), what would that be?
- Imagine 6 mos. down the road, what would you like to be different in terms of (above named area)? Are there some things that you would like to be the same?
- What would you like to accomplish in the first 6 weeks?

Strategies:

- What are some ways of getting to where you want to go?
- Who would need to be involved in getting done what you want to do?
- What would each of you need to do in order to accomplish what you want?

Criteria:

- How will you know when you have done what you want to do?
- How will you know when (child) has made progress in the ways you described?

Guidelines for Writing Family-Centered IFSPs

Clarity

- Use simple language; avoid jargon.
- Emphasize what the child and family can do.
- State precisely what is to be accomplished.

Cohesion

- Make sure strategies match the goal.
- State the family's role for each goal.
- Provide opportunities for intervention in natural settings.
- Avoid being judgmental about families.

Functionality

- Make sure goals are for things the child or family really needs for success in their current environments.
- Develop strategies appropriate for the child's and family's natural contexts.
- State in the active voice what the child, family member(s), or professional(s) will do.

IFSPDEC.DOC-09/28/94-RAMcW

AIM FOR COMMUNICATION

OBJECTIVES

After completing this strand, participants will:

- understand three critical aspects of communication and language
- know how to develop a "script"
- understand both non-symbolic and symbolic forms of communication
- understand three primary communicative functions

(Insert slide # C1)

CRITICAL ASPECTS OF COMMUNICATION & LANGUAGE

There are three critical aspects of communication and language that are essential to the development of social interaction in infants and toddlers: *content*, *form*, and *function*.

CONTENT provides children with something about which to communicate. This might include things that are happening in the child's immediate environment, events that have occurred in the past, or events anticipated in the future. Without content, there is little need for a child, or anyone, to communicate.

FORM provides a child with a means to communicate. Most infants and toddlers demonstrate early communication skills through gestures, which are eventually combined with vocalizations. Vocalizations evolve into verbalizations, which are then used during the act of communication. For children with physical limitations, alternative forms of communication such as eye gaze, sign language, object/picture boards, or an electronic communication device may be needed.

FUNCTION provides a child with a reason to communicate. There are three primary reasons why children communicate: (1) to regulate someone else's behavior, (2) to interact socially, and (3) to draw joint attention to a familiar object, event, or action. Children may *regulate others' behavior* in order to make a request or to protest. *Social interaction* may include greetings, social games, gesturing, and showing off. The act of *joint attention* is used to draw someone else's attention to a common event or an entity on which the child is currently focusing.

These aspects of communication and language are necessary as a basis for the development of any type of communication system, whether it is gestural, vocal, or some alternative means of communication. It is believed that all infants and toddlers, regardless of whether they are typically or atypically developing, have the capability of developing intentional communication skills as early as nine months of age.

CONTENT

There are several ways to create a communication system to reflect the communicative content of a child's natural environment. One effective method is called ***script development***.

(Insert slide # C2)

The following form can help organize various conversational themes used by a child throughout the day.

SCRIPT DEVELOPMENT

Message	Key Word
Scene #1	
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.

Because children communicate throughout the day, it is essential to collect a representative sampling of messages that are important to the child. Go to the child's classroom, daycare setting, or home environment and observe the child's daily activities. Select activities that require interaction within his or her environment. For each activity, write down at least nine key phrases that the child may need to communicate in that setting. Select one key word to represent each phrase or thought. These key words will be represented through the child's current mode of communication, i.e., pictures, objects, gestures, etc. (it should be noted that the length of the message, the type of words selected to represent the message, and the mode through which the child communicates will vary from child to child). The following script represents the dialogue of a preschooler who enjoyed using bubbles to interact with others.

(Insert slide # C3)

SCRIPT DEVELOPMENT

Message	Key Word
Scene #1	
1. Oh boy, bubbles!	1. bubbles
2. I want to blow them.	2. blow
3. Open them, please.	3. open
4. Let's play catch.	4. catch
5. Yay, I caught it!	5. yay
6. Whoops, I popped it!	6. pop
7. Uh-oh, bubbles spilled.	7. uh-oh
8. I'll get them.	8. get
9. All done.	9. all done

Note that all the key words differ and can easily be represented through the use of objects, pictures, or gestures. The messages and the key words selected are *critical* for the development of a communication system. In order to understand the impact of selected vocabulary, the following activity is suggested.

Communication Activity

(Insert slide # C4. Use handout # 2a)

With a partner, use picture communication board #1 to communicate. You may only point to the pictures and look at your partner to convey your messages. While participating in this activity, think about the following questions:

1. How would you feel if this was your only mode of communication?
2. How do you feel about your vocabulary choices?

(Insert slide # C5. Use handout # 2b)

With a partner, now use picture communication board #2 to communicate.

1. How do you feel about <u>these</u> vocabulary choices?
2. How do they differ from the first board you used?

Developing a communication board that has interactive vocabulary is essential for the promotion of reciprocal interaction between the child and the listener. If the vocabulary is not interactive, conversation becomes a one-way monologue.

FORMS OF COMMUNICATION

(Insert slide # C6)

There are two primary forms of communication: ***symbolic*** and ***non-symbolic***.

(Insert slide # C7)

Children who use ***non-symbolic*** communication convey messages using movements and behaviors. Siegel-Causey and Ernst (1989)[1] separate non-symbolic communication into unintentional and intentional forms of communication. Unintentional communication refers to movements that are reflexive or voluntary and are not purposely used by the child to communicate with others. Instead, these behaviors are *interpreted* by others to have meaning and therefore elicit a response from the listener. Intentional communication behaviors, on the other hand, are used by the child to

directly affect the listener's behavior. The following is a list of various forms and descriptions of non-symbolic communication:

Generalized Movements and Changes in Muscle Tone
- ◊ Shows excitement in response to stimulation or in anticipation of an event
- ◊ Squirms and resists physical contact
- ◊ Shows changes in muscle tone in response to soothing touch or voice, in reaction to sudden stimuli, or in preparation to act

Vocalizations
- ◊ Calls to attract or direct another's attention
- ◊ Laughs or coos in response to pleasurable stimulation
- ◊ Cries in reaction to discomfort

Facial Expressions
- ◊ Smiles in response to familiar person, object, or event
- ◊ Grimaces in reaction to unpleasant or unexpected sensation

Pauses
- ◊ Ceases moving in anticipation of coming event
- ◊ Pauses to await service provider's instruction or to allow service provider to take turn

Touching, Manipulating, or Moving with Another Person
- ◊ Holds or grabs another for comfort
- ◊ Takes or directs another's hand to something
- ◊ Manipulates service provider into position to start an activity or interactive "game"
- ◊ Touches or pulls service provider to gain attention
- ◊ Pushes away or lets go to terminate an interaction
- ◊ Moves with or follows the movements of another person

Acting on Objects and Using Objects to Interact with Others
- ◊ Reaches toward, leans toward, touches, gets, picks up, activates, drops, or pushes away object to indicate interest or disinterest
- ◊ Extends, touches, or places object to show to another or to request another's action
- ◊ Holds out hands to prepare to receive object

Assuming Positions and Going to Places
- ◊ Holds up arms to be picked up, holds out hands to initiate "game," leans back on swing to be pushed
- ◊ Stands by sink to request drink, goes to cabinet to request material stored there

Conventional Gestures
- ◊ Waves to greet
- ◊ Nods to indicate assent or refusal

Depictive Actions
- ◊ Pantomimes throwing to indicate "throw ball"
- ◊ Sniffs to indicate smelling flowers
- ◊ Makes sounds similar to those made by animals and objects to make reference to them
- ◊ Draws picture to describe or request activity

Withdrawal
- ◊ Pulls away or moves away to avoid interaction or activity
- ◊ Curls up or lies on floor to avoid interaction or activity

Aggressive and Self-Injurious Behavior
- ◊ Hits, scratches, bites, or spits at service provider to protest action or in response to frustration
- ◊ Throws or destroys objects to protest action or in response to frustration
- ◊ Hits, bites, otherwise harms self, or threatens to harm self to protest action in response to frustration, or in reaction to pain or discomfort

(Above section: copyright 1989, Siegel-Causey & Guess)[2]

(Insert slide # C8)

There are two different types of ***symbolic communication: conventional presymbolic*** and ***conventional symbolic*** communication. (Rowland & Stremel-Campbell, 1987)[3].

Conventional presymbolic communication is represented by a wide variety of gestures whose meaning is agreed upon by members of the communicator's environment. For example, a child in one setting may pat his diaper to indicate the need to use the bathroom while a child in another setting may tug at his pants. The child is pairing a gesture, patting or tugging, with the referent (need to use the bathroom), but it may only be understood by those most familiar with the child and his/her gesture system.

At the stage of conventional symbolic communication, a child is able to pair a *highly recognizable* gesture or symbol with an object, activity, or event found in his/her environment. Symbolic communication can be represented through sign language, representational objects, photographs and pictures, graphics systems, and verbal communication. More specifically, objects and pictures can be represented in the following ways:

(Insert slide # C9)

Suggested representations for bubbles

Objects:

- ◊ Miniature: a small prototype of the bottle being used
- ◊ Identical: an identical empty bubble bottle
- ◊ Representational: a bubble wand

Pictures: *(Insert slide # C10)*

- ◊ Actual-size photos/labels: photo of bubbles enlarged to actual bubble bottle size or label from identical bottle
- ◊ Photographs: any size photo of bubble bottle
- ◊ Line drawings with color
- ◊ Black & white line drawings
- ◊ Abstract symbols: line drawing of bubbles floating in the air or someone popping the bubbles

COMMUNICATIVE FUNCTIONS

(Insert slide # C11)

The three primary purposes of intentional communication are:

- ◊ Behavioral Regulation
- ◊ Social Interaction
- ◊ Joint Attention

Definitions of these categories of communication can be found in the following table:

Table 4.2 DEFINITIONS OF CATEGORIES OF COMMUNICATIVE FUNCTIONS

BEHAVIOR REGULATION *Acts used to regulate the behavior of another person to obtain a specific result. Child's goal is to get the adult to do something or stop doing something. Examples include:*
Request Object/Action Acts -- used to direct another to give a desired object or to carry out an action
Protest Object/Action Acts -- used to refuse an object that is not desired or to direct another to cease an action that is not desired

SOCIAL INTERACTION *Acts used to attract or maintain another's attention to oneself. Child's goal is to get adult to look at or notice him or her. Examples include:*
Request Social Routine Acts -- used to direct another to begin or continue carrying out a game-like social interaction
Request Comfort Acts -- used to seek another's attention to comfort from wariness, distress, or frustration
Call Acts -- used to gain the attention of another to indicate that a communicative act is to follow
Greet Acts -- used to indicate notice of a person or object's presence or to signal the initiation or termination of an interaction
Show Off Acts -- used to attract another's attention to oneself by displaying a performance
Request Permission Acts -- used to seek another's consent to carry out an action; involves carrying out or wanting to carry out the action

JOINT ATTENTION *Acts used to direct another's attention to an object, event, or topic of a communicative act. Child's goal is to get adult to look at or notice an entity or event. Examples include:*
Comment on Object/Action Acts -- used to direct another's attention to an entity or event
Request Information Acts -- used to seek information, explanations, or clarifications about an entity, event, or previous utterance; includes *wh-* questions and other utterances with a rising intonation contour

UNCLEAR *Acts used for a communicative purpose but for which there is insufficient information to determine the category of function that it most appropriately fits. That is, it cannot be determined whether the child's goal is to communicate for behavior regulation, social interaction, or joint attention.*

Adapted from Bruner, 1981; Coggins & Carpenter, 1981; Seibert & Hogan, 1982; Wetherby, Cain, Yonclas, & Walker, 1988; Wetherby & Prutting, 1984.

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In summary, the three critical aspects of communication and language -- *content*, *form*,

and *function* -- should be carefully considered when developing a communication system for every child with special needs. Such a system should be designed with all disciplines in mind and used across all environments; not just during the time a child spends with a speech-language pathologist. Remember that *ALL* children need to be able to communicate *everyday, everywhere,* and *with everyone*.

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1. Siegel-Causey, E. & Ernst, B. (1989). *Theoretical orientation and research in nonsymbolic development.* In E. Siegel-Causey & D. Guess ***Enhancing nonsymbolic communication interactions among learners with severe disabilities.*** Paul H. Brookes Publishing Company, Baltimore, MD (pp. 17-51).

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STRAND 3 HANDOUTS

1. Critical Aspects of Communication and Language

2. Picture Communication Boards (2a and 2b)

3. Script Development Outlines (2)

4. Forms of Nonsymbolic Communication

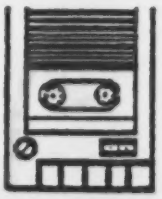
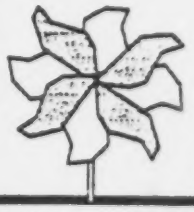
5. Forms of Symbolic Communication

Critical Aspects of Communication and Language

Content..... Something to Communicate About

Form..... A Way (or Means) to Communicate

Function..... A Reason to Communicate

want	ice cream	bubbles
music 	potty	teddy bear
ball	balloon	cookies
car	pinwheel 	drink

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Script Development

Message	Key Word
Scene # _____:	
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
Scene # _____:	
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.

Script Development

Message	Key Word
Scene # __1__:	
1. Oh boy, bubbles!	1. bubbles
2. I want to blow them.	2. blow
3. Open them please.	3. open
4. Lets play catch.	4. catch
5. Yeah, I caught it!	5. yeah
6. Whoops, I popped it!	6. pop
7. Uh Oh, bubbles spilled.	7. Uh Oh
8. I'll get them.	8. get
9. All done.	9. All done
Scene # _____:	
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.

Forms of Nonsymbolic Communication

Generalized Movements and Changes in Muscle Tone

- Excitement in response to stimulation or in anticipation of an event
- Squirms and resists physical contact
- Changes in muscle tone in response to soothing touch or voice, in reaction to sudden stimuli, or in preparation to act

Vocalizations

- Calls to attract or direct another's attention
- Laughs or coos in response to pleasurable stimulation
- Cries in reaction to discomfort

Facial expressions

- Smiles in response to familiar person, object, or event
- Grimaces in reaction to unpleasant or unexpected sensation

Pause

- Ceases moving in anticipation of coming event
- Pauses to await service provider's instruction or to allow service provider to take turn

Touching, Manipulating, or Moving with Another Person

- Holds or grabs another for comfort
- Takes or directs another's hand to something
- Manipulates service provider into position to start an activity or interactive "game"
- Touches or pulls service provider to gain attention
- Pushes away or lets go to terminate an interaction
- Moves with or follows the movements of another person

Acting on Objects and Using Objects to Interact with Others

- Reaches toward, leans toward, touches, gets, picks up, activates, drops or pushes away object to indicate interest or disinterest
- Extends, touches, or places object to show to another or to request another's action
- Holds out hands to prepare to receive object

Assuming Positions and Going to Places

- Holds up arms to be picked up, holds out hands to initiate "game," leans back on swing to be pushed
- Stands by sink to request drink, goes to cabinet to request material stored there

Forms of Nonsymbolic Communication (continued)

Conventional Gestures

- Waves to greet
- Nods to indicate assent or refusal

Depictive Actions

- Pantomimes throwing to indicate "throw ball"
- Sniffs to indicate smelling flowers
- Makes sounds similar to those made by animals and objects to make reference to them
- Draws picture to describe or request activity

Withdrawal

- Pulls away or moves away to avoid interaction or activity
- Curls up, lies on floor to avoid interaction or activity

Aggressive and Self-Injurious Behavior

- Hits, scratches, bites, spits at service provider to protest action or in response to frustration
- Throws or destroys objects to protest action or in response to frustration
- Hits, bites, or otherwise harms self or threatens to harm self to protest action, in response to frustration , or in reaction to pain or discomfort

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Forms of Symbolic Communication

. Sign Language

. Representational Objects

. Photographs & Pictures

. Graphic Systems

. Verbal

BABY TECH: PLAY

Play is the natural activity of children, beginning in early infancy. Through play, children learn about the properties of objects, relationships between objects, and interaction with other children and adults. Although it is often said that play is the "work" of the child, play is very different from work because play is completely directed by the child and has no particular goal other than to have fun, to exert control over what happens, to exercise free choice about what to do, and to move at one's own pace.

(Insert slide # P1)

OBJECTIVES

After completing this strand, participants will know:

- the three elements of designing play situations
- how to analyze each element for a specific child
- how to use common household materials for positioning
- how to write an IFSP goal related to play

Devising play situations for infants and toddlers with special needs entails matching three separate elements:

1. how the child wants to play
2. the motoric capability of the child
3. the characteristics of the toys

(Insert slide # P2)

HOW DOES THE CHILD WANT TO PLAY?

The answer to this question will determine how the play session is structured. The level of play reflects the interrelatedness of a child's cognitive and language abilities. While there are many ways of categorizing levels of play, the following is useful when working with infants and toddlers with special needs.

(Insert slide # P3)

Exploratory: Children are interested in experiencing a variety of sensations and movements. At this stage, a child will look at and listen to objects and will mouth, shake, wave, and bang them. It is important to provide toys of different texture, color, shapes, sounds, and weights in order to encourage exploration.

(Show video vignette of child banging on pan)
(Baby Tech - Tape 2)

Independent: Children enjoy playing alone and using objects in functional ways. Putting in, taking out, and combining objects will be interesting. A child will enjoy toys that show cause-and-effect and afford opportunities for manipulation, making choices, construction, and destruction.

(Show video vignette of child standing on chair)
(Baby Tech - Tape 2)

Parallel: At this stage, a child will play side-by-side with other children, using similar toys but not sharing them. Blocks, cars and trucks, toy houses, books, and simple coloring activities offer opportunities for parallel play.

Associative: At this level, a child will play with other children, sharing toys. In addition to the toys used for parallel play, pretending activities like dressing up and playing with dolls will be enjoyable.

Cooperative: Children play together in an organized way with a common goal. Role-playing and imaginative games emerge at this stage. "Rules" are rudimentary and flexible.

WHAT ARE THE CHILD'S MOTOR CAPABILITIES?

(Insert slide # P4)

For a child without serious motor problems, this part of the observation is relatively simple. If a child has significant difficulty with motor skills, you may have to experiment with several different positions to determine where play is easiest for the child. Try supported sitting, side-lying, semi-reclining, standing in a prone or supine stander, and lying on the stomach. Also, try varying the position of the toy. Use trial-and-error to identify as many functional play positions as you can. Allow plenty of time and observe where the child has the best endurance, freedom of movement, and accuracy. Your goal is to find positions in which the child can function with no assistance or minimal assistance from someone else. If this is not possible because of the severity of the motor impairment, try having the child direct your activity through eye gaze.

When observing motor function, ask the following questions:

Head Control
Can the child keep an upright head and turn from side to side without losing balance?

Eye Control
Can the child look straight ahead, up, down and sideways? Are eye movements independent of head movements? Do eye movements affect balance?

Trunk Control
Can the child sit up straight with the hands free for play? Can the child reach to the floor for a toy and sit up again? Are the legs relaxed or are they being held stiffly to increase stability?

Arm Control
What is the range of reaching in different directions and overhead? Is the trunk stable during reaching? Can both arms be used at the same time?

Hand Control
Can the child swipe at objects with a closed fist? Can an object be grasped, and can grasp be maintained as the arm is moved? Can the child isolate a finger or thumb to pick up, push or poke? Can both hands be used at the same time?

WHAT ARE THE TOY'S CHARACTERISTICS?

(Insert slide # P5)

Given the type of play in which a child is interested and the child's motor status, the aim is to identify as many appropriate toys as possible. A child's ability to play with a particular toy may vary with position, so use trial-and-error and give the child plenty of opportunity to explore the toy. Ask the following questions about the toy:

WHAT DEVELOPMENTAL OPPORTUNITIES DOES THE TOY OFFER?

Different sensations of sight, sound, texture, shape and weight

Manipulation

Cause-and-effect

Functional relationships

Construction/destruction

Social interaction

WHAT MOTOR SKILLS ARE NEEDED TO OPERATE THE TOY?

What hand skills are needed? (e.g., pointer finger, grasp, steady pressure)

How easy is it to depress keys or use movable parts?

How large and heavy is it?

Can it be adapted using low-tech solutions or switches?

IS THE TOY SAFE AND WELL-CONSTRUCTED?

DOES THE TOY REQUIRE BATTERIES?

POSITIONING WITH HOUSEHOLD MATERIALS

There are many ways to improvise positioning devices from easily obtainable items or those in your house. Two advantages of doing it yourself are immediate availability and low cost. Make sure that anything you construct is completely safe: it must not tip over or come apart accidentally. Some examples of commercially available items and home-made substitutes (*see note at end of this section*) are:

Slides # P6 and # P7
- Corner chair with tray (a)
- Copy paper box with lid, placed against wall or couch (a^1)

Slides # P8 and # P9
- Sitting pillow (b)
- Stuffed blue jeans (b^1)

Slides # P10 and # P11
- Floor sitter (c)
- Bucket chair (c^1)

Slides # P12 and # P13
- Bath seat (d)
- Laundry basket (d^1)

Slide # P14
- Neck support (e)
- Small towel in sock (e^1)

Slides # P15 and # P16
- Thumb adductor (f)
- Ponytail holders looped together (f^1)

(Note: A letter alone (e.g., "a") indicates a purchased item; the same letter with the superscript number one (e.g., "a^1" denotes its homemade counterpart.)

WRITING IFSP GOALS

Family-centered IFSP goals frequently relate to play. When attainment of these goals entails use of assistive technology, the necessary items should be incorporated directly into the IFSP goal and submitted with the Assistive Technology grant. Here is a sample of such a goal:

"Amy will use an adapted book with voice output in order to read with the group at circle times."

(Insert slide # P17)

Summary

The process of devising play activities starts with estimating the child's developmental play level. The motor capabilities of the child and the characteristics of toys are then explored with the goal of devising as many play situations as possible. There are many ways of using on-hand materials for positioning children for play.

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P.O. Box 839954
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CATALOGS

The Right Start Catalog
Right Start Plaza
5334 Sterling Center Drive
Westlake Village, CA 91361
800-548-8531

Therapy Skill Builders
A Division of the Psychological Corporation
P.O. Box 839954
San Antonio, Texas 78283-3954
1-800-866-4446

Communication Aids for Children and Adults
Crestwood Company
6625 N. Sidney Place
Milwaukee, WI 53209-3259
414-352-5678

STRAND 4 HANDOUTS

1. Devising Play Activities: How Does the Child Want to Play

2. Devising Play Activities: What are the Motor Capabilities of the Child?

3. Devising Play Activities: What Can the Toy Do?

4. Positioning with Household Materials

DEVISING PLAY ACTIVITIES

Setting up a play situation requires finding a match between three separate things; the kind of play the child would like to do, the motoric capability of the child and the characteristics of the toys. Therefore, here are the questions to ask:

1. **HOW DOES THE CHILD WANT TO PLAY?** This will depend on the child's cognitive and language abilities. The developmental stages of play are:

EXPLORATORY:	The child is interested in experiencing a variety of sensations and movements. At this stage you see shaking, waving, banging, mouthing, looking at and listening to toys. A child will benefit from using lots of different toys to experience different textures, colors, shapes, sounds and weights.
INDEPENDENT:	The child enjoys playing alone, using objects in functional ways. Putting in, taking out, and combining objects will be interesting. The child will enjoy toys which show cause and effect and offer opportunities for manipulation.
PARALLEL:	The child plays alongside other children, using similar toys but not sharing. Books, trucks and cars, blocks and simple coloring offer opportunities for parallel play.
ASSOCIATIVE:	The child plays with other children, sharing toys. In addition to the toys used for parallel play, activities like dressing up and playing with dolls will be enjoyable.
CO-OPERATIVE:	Children play together in an organized way with a common goal. Role-playing, imaginative games emerge at this stage.

DEVISING PLAY ACTIVITIES

2. **WHAT ARE THE MOTOR CAPABILITIES OF THE CHILD?** The important areas to look at are:

HEAD CONTROL: Can the child keep an upright head and turn from side to side without losing balance?

EYE CONTROL: Can the child look straight ahead, up, down and sideways? Are eye movements independent of head movements?

TRUNK CONTROL: Can the child sit up straight so that the hands are free for play? What is the child's posture like in sitting?

ARM CONTROL: Can the child reach in different directions and reach overhead? Is trunk control stable when the child is reaching? Can both arms be used at the same time?

HAND CONTROL: Can the child swipe with a closed fist? hold on to an object and maintain grasp as the arm is moved? use fingers to pick up, push, poke? use both hands at the same time?

For a child without serious motor problems this part of the observation is relatively simple. If a child has significant difficulty with motor skills, you may have to place the child in several different positions to see which ones are easiest for the child. Try sitting, sidelying, semi-reclining, standing in a prone or supine stander, and lying on the stomach. Also, try varying the position of the toy. Use trial and error to find one or more positions. Allow plenty of time for the observation, and watch to see where the child has the best endurance, freedom of movement, and accuracy.

DEVISING PLAY ACTIVITIES

3. **WHAT CAN THE TOY DO?** You want the characteristics of the toy to match both the developmental play level of the child and the motor characteristics of the child.

What Developmental Opportunities Does the Toy Offer?

Different Sensations of texture, shape, weight, sight, sound

Manipulation

Cause and Effect

Functional Relationships

Construction/Destruction

Social Interaction

Can the toy serve several of these purposes?

What motor skills are required to operate the toy?

What hand skills are needed?

How large and heavy is it?

How easy is it to depress keys, use movable parts?

Can it be adapted?

Is the toy safe and well-constructed?

Does the toy take batteries?

SAMPLE IFSP GOAL

While positioned in a floor sitter with a tray and provided with an adapted book with popsicle sticks as page turners, Jason will entertain himself for 10 minute periods by looking at pictures in the book.

POSITIONING WITH HOUSEHOLD MATERIALS

There are manys ways to improvise positioning devices from items in the house or easily obtainable. The advantages of doing it yourself are speed and low cost. Make sure anything you construct yourself is completely safe--can't be tipped over or come apart accidentally. Here are some examples:

PURCHASED ITEM	SUBSTITUTION
Corner chair with tray	Copypaper box with lid, placed against wall or couch
Bolster	Rolled up towels
Sitting pillow	Stuffed blue jeans
Floor sitter	Bucket chair
Bath seat	Laundry basket
Sidelyer	Towel rolls against wall or couch
Neck Support	Small towel in sock

HINTS:

Velcro is your friend!

Check baby catalogs like Right Start or One Step Ahead. They carry many clever products which you may find useful.

AIM FOR LITERACY

OBJECTIVES

After completing this strand, participants will:

- know how children's four ways of communicating (listening, speaking, reading, and writing) can develop together from birth.
- be able to develop and use strategies for creating literacy-rich environments for infants and toddlers with special needs.

We communicate not only through speech, gestures, and facial expressions, but also through written language. To be literate means to be capable of understanding and sending messages through print. Babies as young as 18 months of age often recognize print associated with favorite foods or toys in the form of the logo for a particular restaurant or store. As a result, mothers sometimes notice their young children getting excited as they pass fast-food restaurants or other frequently visited locations.

Exposure to using print for everyday purposes (e.g., writing shopping lists, reading a recipe) helps young children to realize that we can get what we want by using print. Including children with special needs in story reading enhances their vocabulary development and understanding of spoken language. We cannot know just how literate a very young child with special needs can become, but we do know that he or she will NOT become literate if not included in early literacy activities. In order to maximize oral and written language development, infants and toddlers with special needs should participate in literacy-rich environments at home and in daycare situations. These environments adhere to the following principles which spell out our active acronym, AIM.

(Insert slide # L1)

Access. Infants and toddlers with special needs should have *daily* access to print. They should hear stories, watch mom look up numbers in a telephone book, and have ways to color and scribble. We know that physical, sensory, and cognitive impairments will make it difficult for some infants and toddlers to hold books, turn pages, or use crayons for writing and drawing. Tech IT Easy participants will be given an opportunity to adapt a children's story book and a magic marker using simple suggestions. [Here, presenter should show adapted books, bookholder, magic marker holder, and tot-mobile adapted writing tool.]

(Insert slides # L2 - # L4)

Interaction. One of the best predictors of whether or not a child will become literate is how interactive he or she is during story reading. Infants and toddlers are naturally curious and as soon as they can point and babble they begin to comment and ask questions about stories as caregivers read to them. We want to provide a way for each child to participate during story time. Types of books that may be more conducive to participation include predictable stories (e.g., Brown Bear, Brown Bear, What Did You See?), repeated line stories (e.g., Are YOU My Mother?), and stories with no more than three lines of text per page for children under three years of age. Repeated reading of stories helps all children to become more interactive.

(Insert slide # L5)

Readers should be encouraged to paraphrase text and use vocabulary which is more appropriate for a child's language level. It is also very important for caregivers to relate what is happening in a story to something a child has experienced. For example, if the story refers to an elevator, a reader may say, "Oh, we went up in an elevator when we went to visit Daddy at his office."

Most importantly, we must provide a way for a child to ask questions, to make comments about stories, and to retell or make up stories. If a child is not yet talking, or is difficult to understand, communication boards with pictures and/or symbols from a story should be made accessible during story reading. Readers should pause now and then while reading to encourage the child to use the communication board to fill in a word. Children can "read" by filling in just a single word or a whole line of a story, depending on their familiarity with the story and their language abilities.

Voice-output will make story reading much more motivating and interactive. Infants and toddlers may benefit from using any simple, voice-output device that has story-related vocabulary programmed into its system. [Here, presenters should demonstrate loop tapes, adapted tape players, and other light-tech voice-output systems with story lines and other communication overlays. Sample story-communication overlays are included in the Strand 5 Appendix.]

Modeling. By watching literate adults use reading and writing to accomplish real purposes, children learn about reading and writing long before they enter school. Following are some examples of why we use print in our everyday lives:

(Insert slide # L6-L7)

FUNCTIONS OF LITERACY

1. Acquiring knowledge
2. Memory support
3. Self-expression
4. Entertainment
5. Entering a fantasy world
6. Maintaining relationships
7. Problem solving
8. Dealing with emotions
9. Conveying instructions
10. Making announcements

We use reading and writing to help us to remember things, to express ourselves, and to enjoy life. We must model how we use print at home and at daycare. We can model the use of reading and writing during play and during our daily activities. [Presenters should give examples of setting up literacy-rich play and modeling settings, e.g., pretend restaurant with printed menus, doctors office with magazines in the waiting room].

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STRAND 5 HANDOUTS

1 Goodnight Moon Communication Board

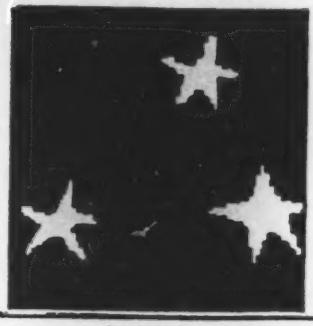
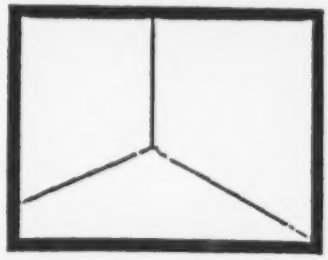
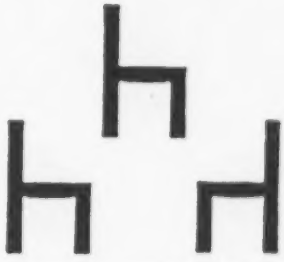
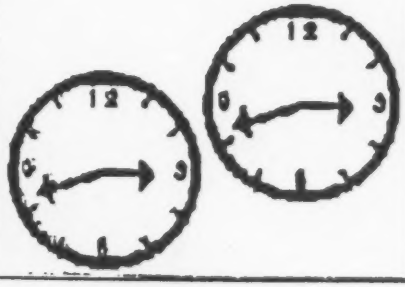
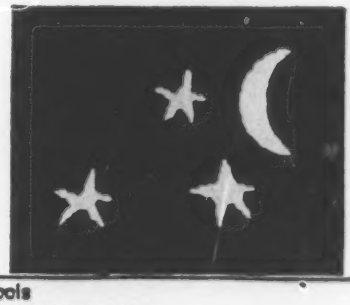
2 General Interaction Communication Board

3 Reaction to the Book Communication Board

4 Our Grandad Communication Board

5 Directions for Finding Illustrations Communication Board

To be used with the book, GOODNIGHT MOON, by Margaret Wise Brown

GOODNIGHT 	MOON	ROOM 
LIGHT	BEARS	CHAIRS 
CLOCKS 	SOCKS	MOUSE
COMB	BRUSH	GOODNIGHT NOISES EVERYWHERE 

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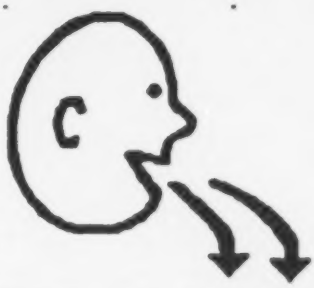
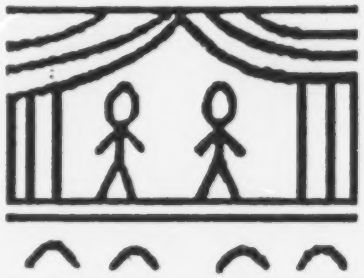
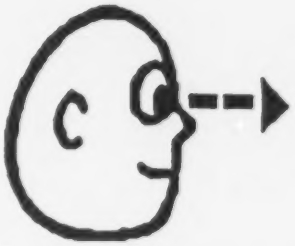
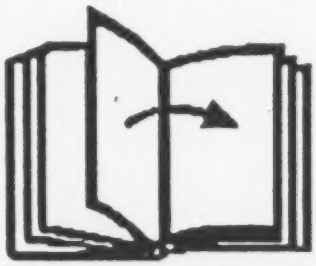
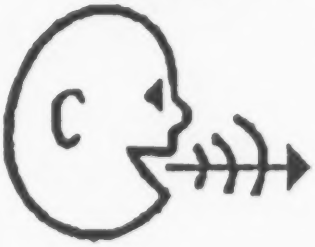
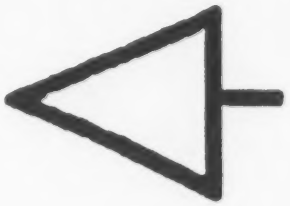
(313) 467-1610

General Interaction Board

Read it again! 	Act it out! 	Show me! 
Turn the page! 	That's funny!	What's that?
I don't like that!	Use a funny voice! 	Wait, go back! 

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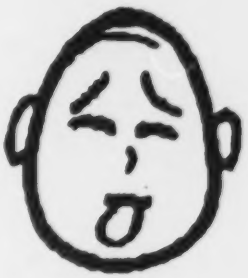
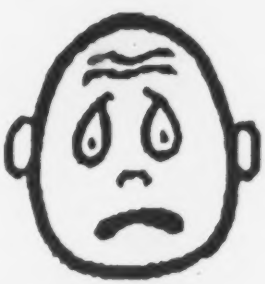
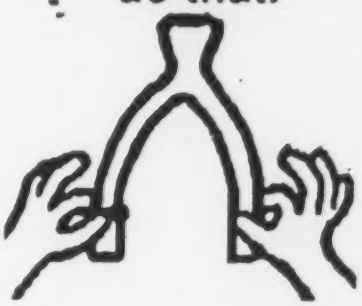
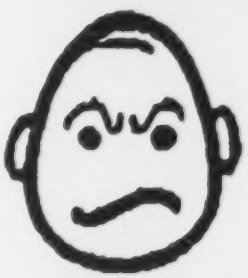
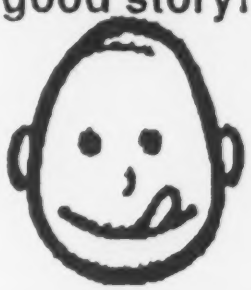
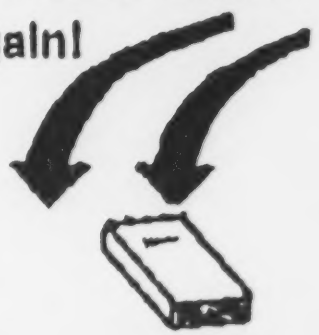
Reaction to the Book

That's funny!	That's crazy!	That's yucky! 
That's scary. 	I wish I could do that. 	That would make me mad. 
That would make me happy.	That was a good story! 	Please read it again! 

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Our Grandad

read it again		what's that?
I like it		it's my turn

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Directions for finding illustrations

up	down	right
left	stop	too far, back up

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MAKE IT & TAKE IT

EQUIPMENT & MATERIALS

- Awl - a pointed tool for marking surfaces or piercing small holes
- Crimper - a tool used to crimp (pinch together) the butt connectors
- Drill & drill bits
- Glue - all-purpose glue
- Hot-glue gun - a tool used to melt glue sticks into hot glue
- Glue sticks
-
- Needlenose pliers - pliers with a slender, pointed "nose," used for holding small items
- Pliers
- Resin core solder - a specific type of solder (a metallic alloy used, when melted, to join metallic surfaces
- Scissors
- Screwdrivers - regular and Phillips
- Soldering gun - a pointed or wedge-shaped device that is electrically heated and used for soldering
- Velcro - adhesive fabric strips which can be purchased as a sew-on material or with a sticky back. Available as *hook velcro* (the rough/scratchy side of the velcro, sometimes referred to as 'male' velcro) or as *loop velcro* (the smooth/soft side of the velcro, sometimes referred to as 'female' velcro).
- Wire stripper - a tool used to strip coating from electrical wires

MAKE IT & TAKE IT TABLE OF CONTENTS

SLIDE NUMBER	ADAPTED TOY
MT #1	Action Figure Adaptations
MT #2	Velcro Bracelet
MT #3	Fast Spinner with Stand
MT #4	Mr. Mouth Mobile
MT #5	Marker Stabilizer
MT #6	Remote Foot-Switch Adaptation
No Slide	Magnetic Switch
MT #7	Eye Gaze Frame
MT #8	Puppet Balloon Blower
MT #9	Totmobile Writing Stabilizer
MT #10	Slow Spinner
MT #11	Spinning Compartment Tray
No Slide	Roller Ride Amusement Park
No Slide	Pop 'n Spin Top Adaptation
MT #12	Small PVC Stand
No Slide	"Eye in the Sky" Photo Relay Switch
No Slide	Ping Pong Ball Switch
No Slide	PVC Wolf Stand
MT #13	Book with Popsicle-Stick Page Turners
MT #14	Adapted Lap Tray with Book

MAKE IT & TAKE IT TABLE OF CONTENTS

PAGE 2

SLIDE NUMBER	ADAPTED TOY
MT #15	Adapted Vehicle
MT #16	Positioner
MT #17	Velcro Glove
MT #18	Carpet Square Play Set
MT #19	Bib with Toys
MT #20	Picture Teething Ring
MT #21	Adapted Book
No Slide	Say It-Play It

ACTION FIGURE ADAPTATIONS

Materials

- ◊ Party favors/Action figures
- ◊ Poker chips
- ◊ Shower curtain rings
- ◊ Hot glue gun and glue stick

Time required: 1/4 hour per figure
(Insert slide # MT1)

Construction

1. Mount each action figure on a poker chip using the hot glue - put a dab of glue on each surface of the figure that contacts the chip. Let set at least two minutes.

2. Fasten a curtain ring to the back of each figure (with the figure standing in the upright position on the table top, hold a curtain ring vertically so that it touches both the back of the figure and the table top; note where the ring touches the figure and apply a short strip of glue vertically at that point; hold the ring vertically against the glued strip and the table top for at least 30 seconds).

3. Build up the glued connection in successive applications until it is about 1 1/4 inches long and envelops the ring with at least two applications.

VELCRO BRACELET

Materials

- ◊ 4" piece hook-and-loop velcro (sew-on)
- ◊ 1/2" elastic long enough to wrap around child's hand one time with an overlap of 1"

Time required: 20 minutes
(Insert slide # MT2)

Construction

1. Sew a 1" piece of hook velcro to one end of elastic and a 1" piece of loop velcro to opposite side of the other end of the elastic.

2. Sew a 2" piece of hook velcro to the middle of the elastic.

3. Stick a piece of loop velcro onto the toy that the child wishes to play with to enable the child to grasp it.

FAST SPINNER WITH STAND

Materials

- ◊ Fuzz-Away shaver (Remington)
- ◊ 1' of PVC pipe, 1/2" diameter
- ◊ 4 PVC pipe elbows
- ◊ PVC pipe cleaner and cement
- ◊ Plastic plate (to make spinning pointer)
- ◊ Paper or plastic plate
- ◊ 6" of hook-and-loop velcro strip (sticky-back)
- ◊ Hacksaw or handsaw
- ◊ Utility knife
- ◊ Pencil, compass, and ruler

Time required: 3/4 hour

(Insert slide # MT3)

Construction

1. Remove the blade screen.

2. Lift out the blade/fan assembly, rotate the fan (Diagram 1) counter-clockwise until it stops, then pull it off the blade wheel. Discard the fan.

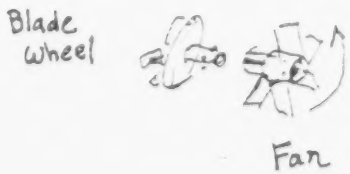


Diagram 1

3. Pop the blade-lock disk off the three retainer posts (see Diagram 2) with a small screwdriver, rotate the disk to unlock and remove the blades, and cut off the three vanes protruding from the blade wheel.

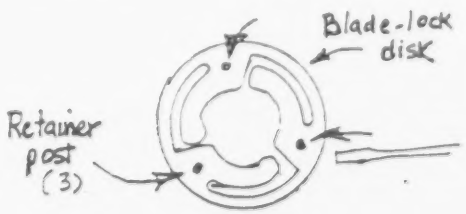


Diagram 2

4. Cut the PVC pipe and clean and cement the pipe and elbows to form the shaver-holder assembly shown in Diagram 3. *Note that the two elbows on the ends are perpendicular to the two adjoining elbows.*

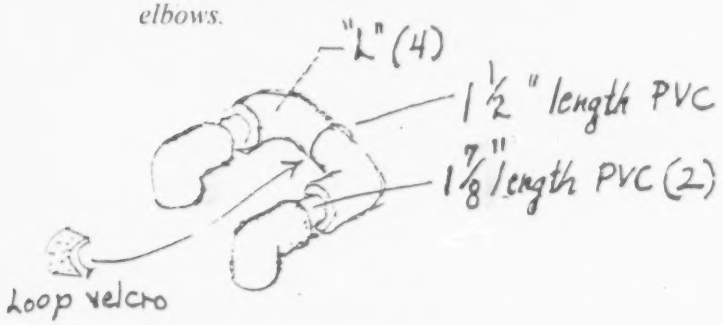


Diagram 3

5. Attach hook velcro down the back of the shaver and loop velcro around the juncture of the two innermost "L"s (see Diagram 3). Place the shaver in the holder with the velcro on the back of the shaver contacting the velcro on the holder.

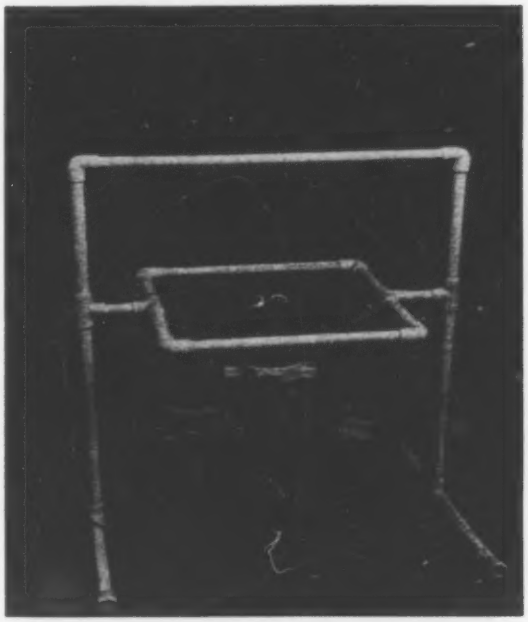
6. Using the compass and ruler, find the center of the paper plate, mark it with a "+" and cut four 5/8" radii along the lines. Push the cut portions through the plate from topside, bending them so they protrude straight down. Place the plate on the shaver.

7. Fashion a pointer from the plastic plate, balance the pointer on the blade-wheel and mark its balance point. Attach the pointer to the blade-wheel with velcro at the balance point.

MR. MOUTH MOBILE

Materials

- ◊ Mr. Mouth Game (Milton Bradley)
- ◊ 4 infant toys
- ◊ "Attach-a-toys" straps (Toys R Us)
- ◊ Cord for hanging mobile
- ◊ 1/8" phone jack (Radio Shack #274-0333)
- ◊ 1' of speaker wire (22 gauge)
- ◊ Wire stripper
- ◊ Drill and drill bits
- ◊ Soldering gun and resin core solder
- ◊ Hot glue gun and glue stick
- ◊ Small-blade screwdriver
- ◊ Needle-nose pliers
- ◊ Awl



Time required: 3/4 hour
(Insert slide # MT4)

Construction

1. Remove the top of Mr. Mouth's head.
2. Using a small screwdriver, pry the plastic disk from the underside of the arms-rotation unit.
3. Pry the locking collar from the shaft (exposed when the disk in Step 2 is removed). Remove the arms-rotation unit and the metal shaft.
4. With the needle-nose pliers, bend the "wiper" arm of the switch upward so that it no longer contacts the stationary terminal when the arm is rotated.
5. From the top and with the battery cover removed, pass the speaker wire down through the hole shown in Diagram 1 and route it around the underside as shown in Diagram 2.

6. Strip and solder the wire ends, one to the wiper arm tip and the other to the stationary terminal. (Ensure that the wire is routed clear of moving parts and is no closer than 1/4" to the outside edge - to allow clearance for the internal sections of the arms-rotation unit.)

7. From topside, hold the jack in the compartment shown in Diagram 1, so that it is low enough to close the battery door and far enough toward the wide side of the compartment to be easily inserted - then mark the spot for the hole.

8. Make a dimple in the plastic with the awl, drill a small pilot hole, then enlarge the hole to 15/64".

9. Strip and solder the speaker wire (protruding up from beneath) to the jack, insert the threaded end through the hole from inside, and affix the washer and nut. Rotate the jack as necessary to keep the wire beneath the battery cover and then tighten the nut.

10. Replace the metal shaft, the arms-rotation unit, the metal locking collar, and the plastic disk. Install the battery and replace the battery cover.

11. Attach the arms to the arms-rotation unit; find and mark the balance points on either side of the mouth and just below the 3/8" rim (they'll be close to the line formed by the straight portion of the battery door). Drill a 9/64" hole at each of those two locations. Pass the length of cord needed for suspending the mobile through the holes.

12. Hot glue the arms into place; then attach the infant toys.

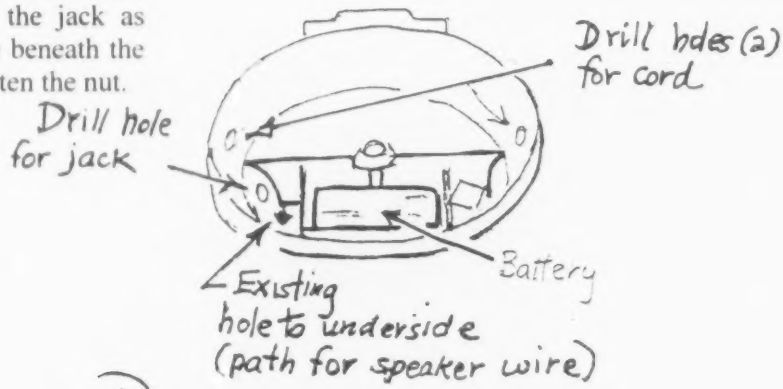


Diagram 1

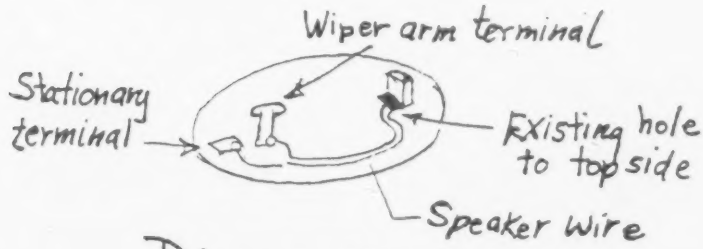
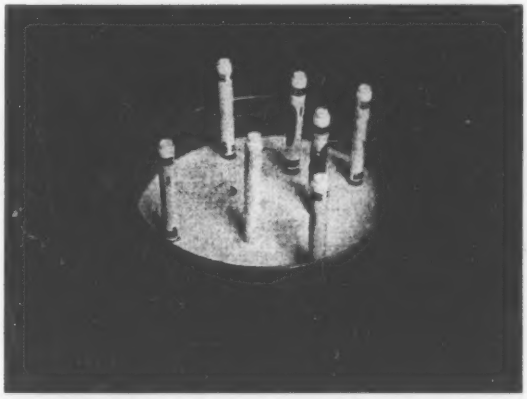


Diagram 2

MARKER STABILIZER

Materials

- ◊ Plaster of Paris (8 lbs.) or substance of similar consistency
- ◊ Markers (water soluble) with caps that flare *(Ideal marker pen is short and has cap that opens easily, with cap flared outward at the closed end)*
- ◊ Cookie tin (model is 9.5" in diameter and 3.5" high)



Time required: 1/4 hour
(Insert slide # MT5)

Construction

1. Mix enough plaster and water to fill the tin about three-quarters full (the model cookie tin used approximately 12 cups of plaster to six cups of water). Then stir as you would stir paint, to get rid of lumps. Pour into cookie tin.

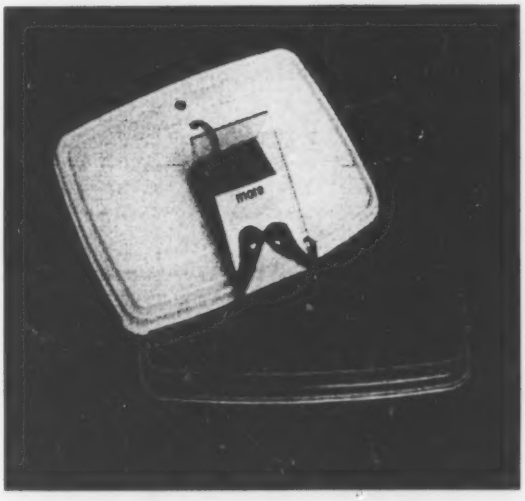
2. Test after NO MORE THAN 15 MINUTES to see if the mix is firm enough to support the pens (the mix sets in 30 minutes). Insert each pen, cap-down, until the cap is barely visible and then hold until there is no apparent movement when you release it.

3. Let mix cure 24 hours before using pens.

REMOTE FOOT-SWITCH ADAPTATION

Materials

1. Remote foot switch (Radio Shack #44-610c)
2. Acrylic picture frame (3 1/2" x 5") with 1 1/2-inch lip
3. 1 piece of 1"-thick foam (5/8" x 2 1/2" x 1")
4. Shielded adapter plug: 3/32" x 1/8" (Radio Shack #274328)
5. Hot glue gun and glue stick
6. Scissors
7. Pliers

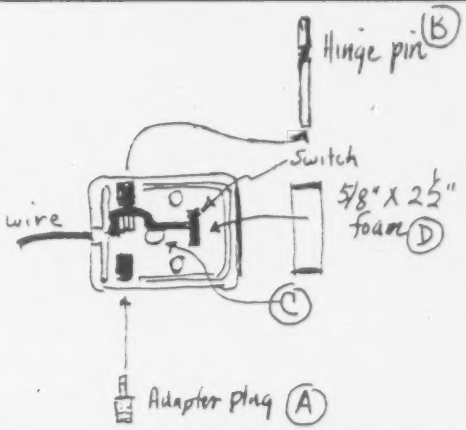


Time Required: 1/2 hour
(Insert slide # MT6)

Construction

1. Orient the foot switch so that the foot pedal is upright and the wire leading from the base extends to the left.

2. Press the pedal down and hold it. **Caution: This foot switch has a strong compression spring inside the base (under the foot pedal). Hold the base and pedal together as you extract the hinge pin!** Using the 1/8" shielded adapter (A) as a tool, push the hinge pin (B) through the hole nearest you.....far enough through the hole in the opposite side to grasp it with pliers. **Continue holding the pedal down** as you extract the pin with the pliers; then release the pedal slowly.



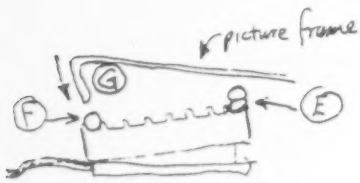
3. Remove the compression spring (C).

4. Cut the 5/8" x 2 1/2" x 1" piece of foam and insert it between the electrical switch and the side of the base opposite where the wire exits.

5. Reposition the pedal over the base and (with the wire once again exiting to your

left) insert the hinge pin (*grooved side first)* into the hole nearest you and push it until it protrudes through the opposite hole.

6. Lay a strip of hot glue along the high side of the highest treadle strip on the pedal (E) and let it set. Then put a second strip on top of the first and let it set. This serves as a built-up support for the picture frame which will be installed in the next step.



7. If there is a protective coating on the acrylic picture frame, remove it.

8. Lay a strip of hot glue between the lowest and next-to-lowest treadle strip (F) and set into it the angled edge of the picture frame (G) so that the back of the frame rests on the built-up glue laid in step 6.

MAGNETIC SWITCH©

Materials Required

- ◊ Mini magnetic reed contact switch, normally closed (Radio Shack #49-497)
- ◊ 1/8" Phone Plug to Lug End Cable (Radio Shack #42-2454)
- ◊ Butt connectors (Radio Shack #64-3073)
- ◊ Wire stripper
- ◊ Crimper

Time required: 20 minutes

Construction

1. Pull the loose insulation off wire ends of Mini Magnetic Reed Contact Switch.
2. Cut lug end off the Phone Plug to Lug End Cable (42-2454). Strip 1/4" wire insulation off each strand of wire.
3. Thread each wire end of the Mini Magnetic Reed Contact Switch into a separate butt connector and crimp securely.
4. Thread each wire end of the Phone Plug to Lug End Cable into the other side of the butt connectors and crimp.
5. Attach to the underside of a table, laptray, etc. by removing adhesive covering and pressing sticky side of relay into place.
6. Test by connecting to the toy or device and bringing magnet into proximity of the contact switch. Use of stronger magnets will result in increased sensitivity.

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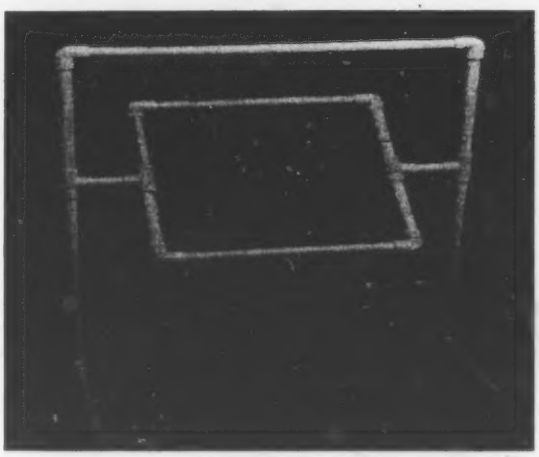
EYE GAZE FRAME

Materials

- ◊ 15' of PVC pipe (1/2" diameter)
- ◊ 6 PVC pipe "T" connectors
- ◊ 6 PVC pipe elbows
- ◊ 4 rubber furniture tips to fit diameter of PVC pipe
- ◊ Hacksaw or handsaw
- ◊ Flat file or medium sandpaper
- ◊ PVC pipe cement
- ◊ WD-40 lubricant



Time required: 3/4 hour
(*Insert slide # MT7*)

1. Cut the pipe lengths shown in the three assemblies; remove spurs and flare from the ends with a flat file or medium sandpaper.

2. Clean, cement, and assemble one pipe and socket at a time until all three assemblies are completed. During the process, ensure that the pipes are seated in the sockets (twist the pipe as you push it in) and all elbows and T connectors are pressed and held flat against the table top immediately after cementing.

3. Lubricate pipe ends A and B with WD-40 lubricant, then connect Assemblies 1 and 2.

4. Tape a strip of masking tape about 2' long across the work surface; measure the distance "w" in Assembly 2 and tape another strip parallel to and "w" distance from the first. Join the tapes with another strip of tape that crosses the parallel strips at about 90 degrees (see Diagram 1).

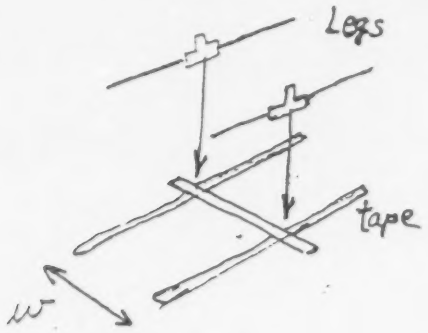
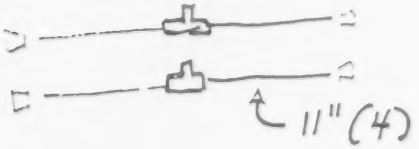


Diagram 1

5. Lay the legs in Assembly 3 on the parallel tapes with the T connectors at the junction of the crossover tape. With help from an assistant, clean and cement the remaining two pipe-ends and sockets, and complete the assembly.

Assembly 3



PUPPET BALLOON BLOWER

Materials

- Puppet
- Aquarium pump (Second Nature Whisper 600)
- Aquarium tubing (6')
- Plastic T connector for tubing
- Syringe (can find with children's liquid medicine)
- Balloons (pre-inflated/deflated or thin-walled. *Unique's* 9" round works well)
- Utility knife or scissors
- Flat file or medium sandpaper

Time required: 20 minutes
(*Insert slide # MT8*)

Construction

1. Cut two 1' lengths from the aquarium tubing.

2. Connect the two 1' lengths to the pump outlets and their opposite ends to the opposing sides of the T connector. Connect one end of the remaining four-foot length to the T connector.

3. Make a small hole in the puppet's mouth and insert the smaller end of the syringe inside. *Note: if using the Ezy Dose syringe, it is recommended that you round off the flange at the wide end (to more easily attach the balloon). Using a sharp utility knife, shave the flange until it is nearly round; finish rounding with a flat file or medium sandpaper.*

4. Connect the remaining end of the four-foot tubing to the smaller end of the syringe (inside the puppet).

5. Attach a balloon to the wide end of the syringe.

TOTMOBILE WRITING STABILIZER

Materials

- ◊ Toddle Totmobile
- ◊ 1 plastic clothespin
- ◊ Hot glue gun and glue stick
- ◊ 1 thin marker pen
  (washable ink is recommended)

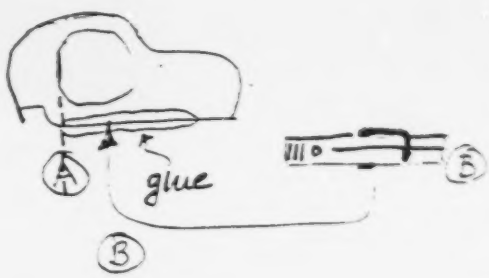
Time Required: 10 minutes
(*Insert slide # MT9*)

Construction

1. Lay a liberal bead of hot glue along the side of the vehicle in the horizontal groove below the doorway and starting at the rear edge of the doorway (A) for nearly the length of the clothespin.

2. Hold the clothespin (B) with its open end "rearward" against the glue until the glue sets.

3. Build up the glue until it attaches nearly the entire length of the clothespin's adjacent side.



SLOW SPINNER

Materials

- ◊ Paper or plastic plate
- ◊ 1" wood screw (#4)
- ◊ 1' of 3/4"-wide hook-and-loop velcro strip
- ◊ Let's Go Fishin' game (Toys R Us)
- ◊ 1/8" phone jack (Radio Shack #274-0333)
- ◊ Soldering gun and resin core solder
- ◊ Drill and drill bits
- ◊ Awl
- ◊ Scissors
- ◊ Small Phillips screwdriver
- ◊ Double-sided adhesive tape

Time required: 3/4 hour
(*Insert slide # MT10*)

Construction

1. Remove battery and tape the battery door closed.

2. Remove all plastic fish, invert the *Let's Go Fishin'* unit, and remove the switch-motor cover (which is attached with two Phillips-head screws).

3. Remove the wires from the switch terminals (melt the solder and pull the wires away).

4. Drill a hole through the unit (see Diagram 1) about halfway between the screw-attachment post and the partition that passes through the battery case and about 1/2" below the lip of the unit. With the awl, make a dimple in the plastic, marking the hole; start with a small drill bit for the pilot hole; increase the hole size to 5/16"; remove plastic shavings from the unit.

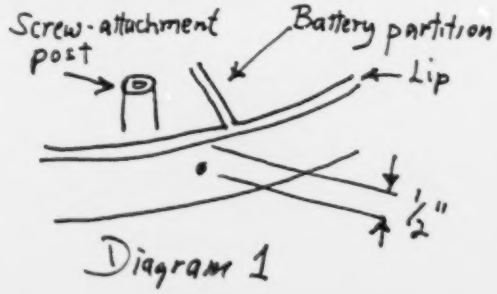


Diagram 1

5. Insert the 1/8" jack's threaded end through the hole from inside the unit and affix washer and nut; rotate the jack so that the terminals are easy to access; tighten the nut.

6. Solder the wires to the jack terminals and replace the switch/motor cover.

7. Insert the battery and tape the battery door closed.

8. Cut 12 one-inch pieces of Velcro hooked and looped strips: Attach six of the hooked pieces to the unit's wheel, one over each of the voids near the top outer edge (see Diagram 2). Affix the sticky sides of the 12 looped pieces together so that there are six back-to-back pairs; then place them atop the hooked pieces on the wheel.)

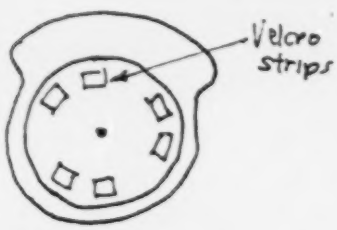


Diagram 2

9. Mark the center of the paper/plastic plate with a "+" and cut along the lines for about 1/4" from center. Push down from atop the plate and cut off the protrusions.

10. Remove the screw from the center of the wheel, replace it with the #4 wood screw, and hand tighten.

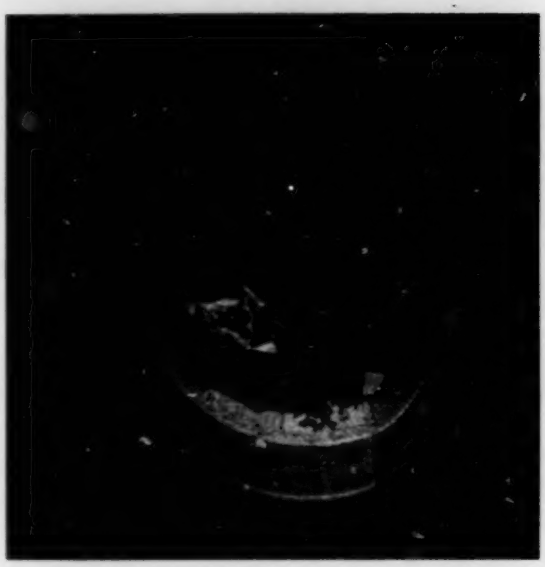
11. With the paper/plastic plate centered over the wheel, lower it onto the exposed adhesive backs of the Velcro.

12. Fashion a pointer and affix it to the head of the wood screw with double-sided adhesive tape.

SPINNING COMPARTMENT TRAY

Materials

- ◊ Plastic compartment tray (vegetable tray)
- ◊ Coat hanger
- ◊ 1' of 3/4" hook-and-loop velcro strip
- ◊ Let's Go Fishin' Game (Toys-R-Us)
- ◊ Soldering gun and resin core solder
- ◊ Drill and drill bits
- ◊ Awl
- ◊ Scissors
- ◊ Small Phillips screwdriver
- ◊ 1/8" phone jack (Radio Shack #274-0333)



Time required: 3/4 hour
(*Insert slide # MT11*)

Construction

1. Remove battery and tape battery door closed.

2. Remove all plastic fish, invert the Let's Go Fishin' unit, and remove the switch/motor cover (it has two Phillips head screws).

3. Remove the wires from the switch terminals (melt the solder and pull the wires away).

4. Drill a hole through the unit (see Diagram 1) about half-way between the screw attachment post and the partition that passes through the battery case - and about 1/2" below the lip of the unit:
   - with the awl, make a dimple in the plastic, marking the hole
   - start with a small drill bit for the pilot hole
   - increase the hole size to 5/16"
   - remove plastic shavings from the unit

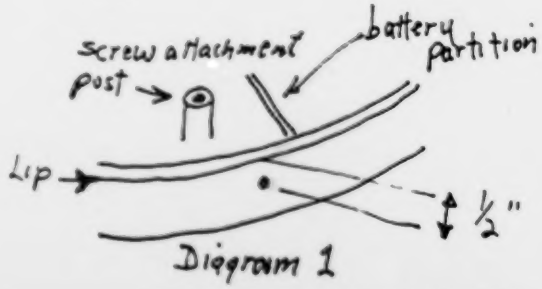


Diagram 1

5. Insert the 1/8" jack's threaded end through the hole from inside the unit and affix washer and nut. Rotate the jack so that the terminals are easy to access. Tighten the nut.

6. Solder the wires to the jack terminals and replace the switch/motor cover.

7. Insert the battery and tape the battery door closed.

8. Cut 12 1" pieces of velcro hook-and-loop strip:
   - attach 6 of the hooked pieces to the unit's wheel, one over each of the voids near the top outer edge (see Diagram 2).
   - affix the sticky sides of the 12 pieces together so that there are 6 back-to-back pairs; place them atop the hooked pieces on the wheel.

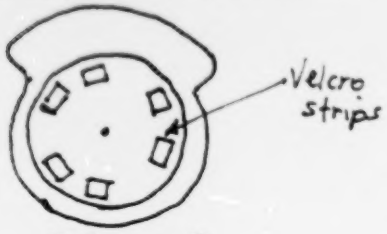


Diagram 2

9. Keeping it centered above the wheel, lower the compartment tray onto the wheel. *Note: It may be necessary to drill out the center of the compartment tray to aid in centering it on the wheel.*

10. Fashion a pointer from a coat hanger and hot-glue it to the top outer edge of the unit.

ROLLER RIDE AMUSEMENT PARK

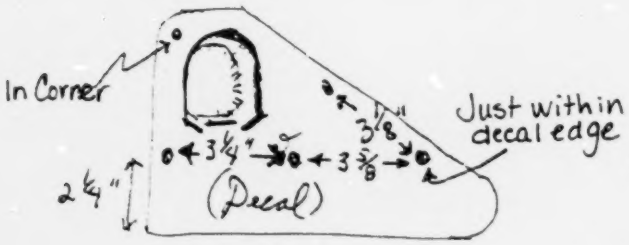
Materials

- ◊ Sesame Street's Roller Ride Amusement Park
- ◊ 1/8" phone jack (Radio Shack #274-0333)
- ◊ #1 Phillips screwdriver
- ◊ Exacto (or similarly sharp) knife
- ◊ Wire stripper and cutter
- ◊ Soldering gun and resin-core solder
- ◊ Awl
- ◊ Drill and drill bits

Time Required: 3/4 hour

Construction

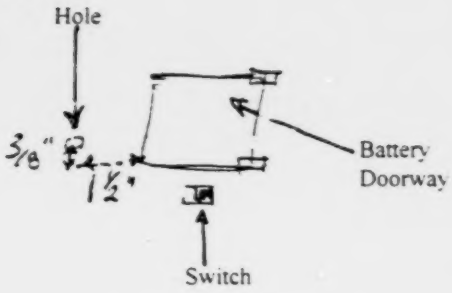
1. If there are batteries in the roller ride lift, remove them. Remove the screws from the lift (five screws are covered by the decal that is on the same side as the four unobscured screws). Press on the decal near the approximate locations shown in Diagram 1 to make impressions of the holes; then cut openings to access the screws.



2. With the lift laying on its switch side, open the bottom far enough at the switch end to access the switch contacts. (The other end is apparently glued around the wedge connecting the sides).

3. If you can reach the switch terminals with the soldering gun, melt the solder and pull the wires from the terminals. If not, cut the wires as close to the terminals as possible and strip about 1/4-inch of the insulation from the ends.

4. Make a dimple in the plastic at the location shown in Diagram 2, drill a small starter hole with a small drill bit, then drill a 15/64-inch hole.



5. Remove the nut and washer from the phone jack and solder the wires removed in step 2 to the jack terminals.

6. Insert the threaded end of the jack through the hole from inside the lift and affix the washer and nut. Tighten the nut.

7. Reattach the lift sides with the screws.

8. Insert the batteries.

POP 'N SPIN TOP ADAPTATION

Materials

- ◊ Pop 'n Spin top (Playschool)
- ◊ 4" diameter plastic disk (coaster)
- ◊ Hot glue gun and glue stick
- ◊ Compass and pencil for drawing circle

Time required: 10 minutes

Construction

1. Draw a circle on the bottom of the disk using a 1" radius centered on the center of the disk. Leave the disk on the work surface, bottom-side up.

2. Apply a liberal amount of hot glue on the top of the press-to-spin mechanism, invert it and hold it against the disk, in the center of the circle, for a few seconds.

3. Set the top upright and hold the disk level until the glue sets - about 30 seconds.

4. Fill in the gap between the disk bottom and the press-to-spin mechanism with applications of hot glue.

SMALL PVC STAND

Materials

◊ 4' of PVC pipe (1/2" diameter) cut as follows:
- two 3 1/8" sections
- four 2 15/16" sections
- one 1 7/16" section
- two 5 1/2" sections
- one 6 7/8" section

◊ PVC cement
◊ 6 PVC pipe elbows
◊ 2 PVC pipe "T" connectors
◊ 2 rubber furniture tips to fit diameter of PVC pipe

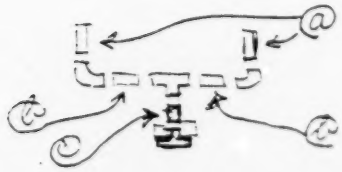
Time required: 1/2 hour
(Insert slide # MT12)

Construction

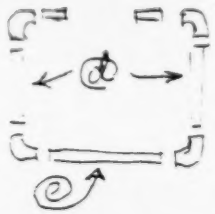
1. Cut the lengths of PVC pipe as directed above. Remove any spurs or flared edges from the outside perimeters with a flat file or medium-grade sandpaper.

2. Lay the pipe and connectors out on a flat surface to form the two assemblies shown below.

Assembly A



Assembly B



3. Using the PVC pipe cement, cement the pipes and connectors, one assembly at a time. **Caution: Ensure that each connector lies FLAT on the table immed iately after cementing and ensure that each pipe is "seated" all the way into each socket.**

4. When you're ready to join the two assemblies (**A** and **B**) together, decide upon the angle at which you want the frame inclined and figure out a means of measuring it (for example, use a cardboard cutout triangle).

5. Affix the rubber tips to the legs.

6. Apply the PVC cement to the remaining two pipe lengths and connectors (sockets) and then connect them. Then, **without delay**, adjust and hold the assemblies to form the desired angle of inclination of the frame.

The Eye In The Sky©

Photo-Relay Switch

SafeHouse Photo-Relay as a Transparent Switch Control System

General Description

The photo-relay sensor provides unique capabilities useful for the control of devices and systems by persons with movement limitations. The sensor maintains an optical vigil over a defined reflective surface and accepts any interruption of its projected light beam as a switch activation. Movement of a body part, or a target object may be detected if it occurs within the reflective zone area.

The sensor's optical head can be mounted in a remote location from the user and is therefore appropriate for persons for whom wires and the physical presence of an adaptive switch is contraindicated, (e.g., babies and people exhibiting tactile defensiveness or significant extraneous movement). The reflector is the only part of the switch mechanism that is present in or around the user's work or play surface.

Sensitivity of the switch is adjustable both in terms of a sensitivity ***beam control knob*** on the rear of the optical head, and in terms of the relative ***size*** and ***location*** of the reflective material that is provided. Experimentation with these parameters will yield a highly sensitive switch capable of detecting even extremely minute movements. My recommended application of fluorescent pink, "SEE ME" adhesive reflectors yields increased sensitivity in low light and enhanced safety features compared to the stock reflector that is shipped with the system.

The unit is capable of operating in a ***normally open*** or a ***normally closed*** mode, depending on how the connections leading to the device are arranged on the rear of the unit. This feature allows uninterrupted operation of a device (normally open mode) until movement "breaks" the beam.....**or**, no operation of the device will occur until the beam is broken (normally closed mode).

Directions

1. Locate the **barrier strip** on rear of unit, which consists of a **vertical row** of **Phillips head screws**. This array of screws will be the attachment points for the power supply wire pair (the two top screws designated + and - respectively), and the wire pair which will be used to connect the sensor to a toy or device. Note that to the right of each screw-terminal, a designation marker is provided to assist us in making the correct connections to our power supply cable, and to the lug ends of our toy/device cable (Radio Shack **#42-2454**).

2. Regardless of your intention to use normally open **or** normally closed modes, note that the 4th screw terminal (from the top of the optical head) is always used as the attachment point for one of the wire lugs leading to the connected device (Radio Shack cable #42-2454). This screw is used with either mode and is considered the **'common' terminal.** This screw-terminal is situated between the normally closed (N.C.) and the normally open (N.O.) connecting screws. **Loosen this screw and attach one of the wire lugs as illustrated in figure After sliding the forked prongs under the screw head, retighten the Phillips head screw securely**.

3. **Attach the remaining lug to either of the terminals selected based upon intended mode, (normally closed/open).** Remember, either of these terminals can be used dependent upon the mode of operation you have chosen, i.e., normally closed or normally open as designated "**NC**" or "**NO**" on the unit itself.

4. Open the package containing the power supply and remove the plug-end connector, being careful to preserve as much of the wire as possible. **Separate approximately 2 inches of the fused insulation (which attaches the two wires together), and strip 1/4 inch of insulation from each of these two wires. Place the bare wire portion of one of the wires into the insulated sleeve of a Ring Tongue Connector (Radio Shack 64-3032), and crimp the sleeve securely around the stripped wire. Repeat this proced-ure for the remaining power supply wire.**

5. **Remove the Phillips head screws designated + and -, located at the top of the terminal array**. Note that one of the power supply wire leads is coded with a **white** line along its border. This cable end is connected to the positive (+) terminal located on the upper most portion of the barrier strip. **IMPORTANT: Securely attach the white coded wire to the + terminal making sure that no wire strands remain unattached to the ring connector, or the Phillips head screw.** Attachment is accomplished by inserting the screw through the opening in the center of the ring, and replacing the screw. **DO NOT** inadvertently connect the white coded lead to the negative terminal that is designated on the back of the sensor as -.

6. **Connect the remaining power supply lead to the terminal screw located directly under the screw described in #5 above.** Please note that the uncoded wire is attached to the terminal designated negative (-) on the rear of the unit.

Mounting

The mounting bracket that is shipped with the unit provides a flexible means of placement in a variety of settings. I personally favor a mounting which consists of clamping the unit to the top of a camera tripod. By all means please ensure that the unit is securely affixed to

prevent damage or breakage of the glass lenses. Small "C" clamps should provide sufficient attachment to the most placement surfaces.

Since the unit is powered by 12 Volt DC current, wheelchair batteries should provide a viable alternative to household current when portability becomes an issue. Consult an electrician before interfacing this unit with a power supply other than the model listed above.

Reflectors

The unit comes supplied with one plastic bicycle type reflective rectangle. I recommend use of florescent reflective stickers to be more appropriate. These stickers are Department of Transportation (DOT) approved, adhesive backed, vinyl, reflectors available from many motorcycle by motorcycle dealers, or directly from the manufacturer at the address provided. Pink reflectors have proven to be most effective under low light conditions.

For more information, please call Sonny Johnson at 919-758-2240

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PING PONG BALL SWITCH

Materials

- ◊ Ping pong ball
- ◊ Marvel connector (1 1/2") from Lowe's that includes 1 1/2" male adapter (minimum of 1 7/8" deep), screw-on retainer cap, and beveled collar
- ◊ 1 piece of corrugated cardboard (6" x 6" piece of 1/8"-thick cardboard)
- ◊ Submini lever switch (Radio Shack #275-016)
- ◊ 1/8" phone plug (Radio Shack #274-286A)
- ◊ 1' of 22 gauge speaker wire
- ◊ Hot glue gun and glue stick
- ◊ Soldering gun and resin core solder
- ◊ Drill and drill bits
- ◊ Compass (for drawing a circle)
- ◊ Utility knife
- ◊ Medium sandpaper

Time required: 1 hour

Construction

Be certain that the male adapter. Diagram 1. is at least 1 7/8" deep.

1. Cut a 1 7/8" diameter disk from the cardboard. Cut on the outside of the line to ensure a snug fit within the adapter. (if cut proves too large, sand the perimeter).

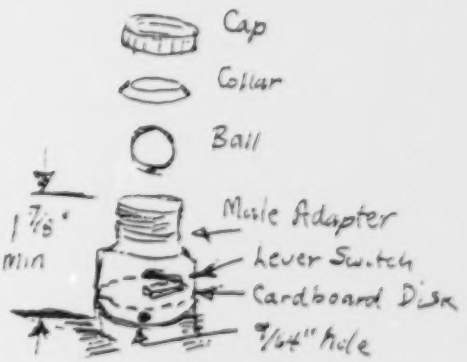


Diagram 1

2. Cut a rectangle (1/4" x 3/4") out of the disk, as shown in Diagram 2. Cut on

the inside of the line so that the lever switch will fit snugly into the hole.

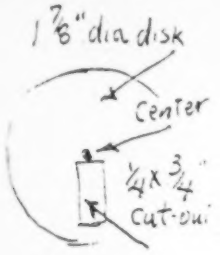


Diagram 2

3. Position the lever switch about halfway through the rectangular hole - with the extended lever nearest the center of the disk.

4. Ensure that the lever switch is perpendicular (no significant tile) to the cardboard. Glue the sides of the switch to the cardboard with hot glue on both sides of the disk.

5. Insert the disk, switch-lever side first, into the wide end of the male adapter - just far enough so that it stays.

6. Insert the ping pong ball into the threaded end, then the collar (beveled side out so the ball extends the farthest through the cap), then put on the cap -- screw it all the way on.

7. Hold the assembly with the cap end down, then push the cardboard disk gradually and evenly downward until you feel no looseness between the ball and the switch lever; the disk position is correct when the ball doesn't rattle significantly and pressing it a short distance makes the switch click.

8. Hot glue the disk in to place from the bottom of the assembly (end opposite the cap end).

9. Drill a 9/64" hole through the adapter wall as shown in Diagram 1.

10. Pass the 22 gauge wire through the hole, then strip and solder one wire to the common (C) terminal of the switch and the other to the normally open (NO) terminal. Be careful: the NC terminal label looks a lot like NO.

11. Hot glue the wire to the adapter wall where the wire passes through it.

12. Slip the plug insulator over the end of the wire, threaded end last.

13. Solder the two remaining wires to the plug terminals and screw on the plug insulator.

Adapted from M. Caldwell (1991). ***Constructing a Ping Pong Ball Switch.*** *Aug-Communique, 9, 2, pp. 8-9.*

PVC WOLF STAND

Materials

- ◊ Hacksaw or handsaw
- ◊ Flat file or #100 medium sandpaper
- ◊ PVC pipe cement (1/4 pint)
- ◊ 5' of 1/2" diameter PVC pipe cut as follows:
  - 3 7/8" pieces (1)
  - 3" pieces (2)
  - 7 1/8" pieces (4)
  - 12 1/4" pieces (1)
  - Elbows (1/2") (4)
  - Tees (1/2") (2)
- ◊ 2 rubber furniture tips (7/8" diameter)
- ◊ Hook and loop velcro

Time required: 3/4 hour

Construction

1. Cut the PVC sections shown in the diagram on page 30 using either a hacksaw or a handsaw.

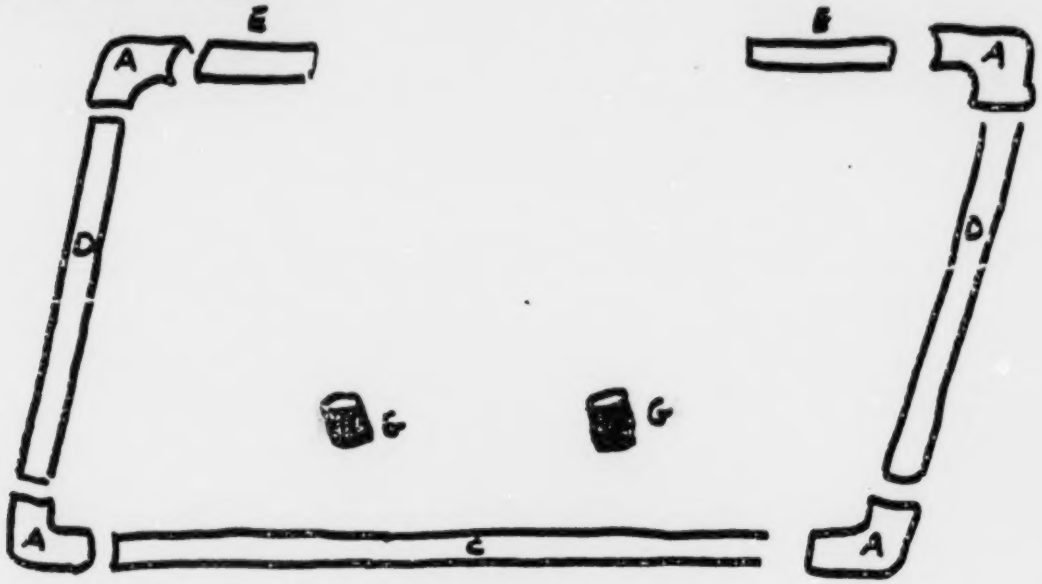
   Remove spurs or flares from the outside diameters with a flat file or sandpaper so that the pipe ends can be inserted into the elbow and tee sockets without obstruction.

2. Lay the pipe sections, elbows, and tees on a flat surface in their proper positions for making the two assemblies shown in the assembly diagrams.

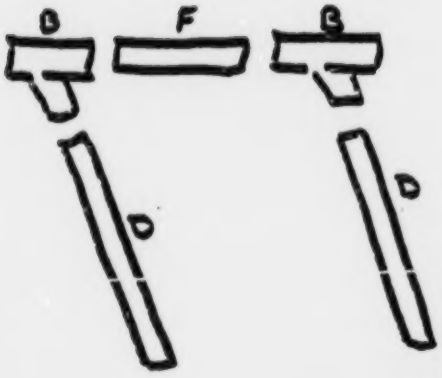
3. For each of the two assemblies:
   - Apply cement as directed on the can and insert pipes with twisting motion until they reach bottom in the sockets.
   - Ensure that all the elbow and tee connectors, as they are cemented into an assembly, lay flat on the work surface immediately after cementing and until the cement sets (at least 30 seconds).

4. Put the rubber furniture tips onto the support legs.

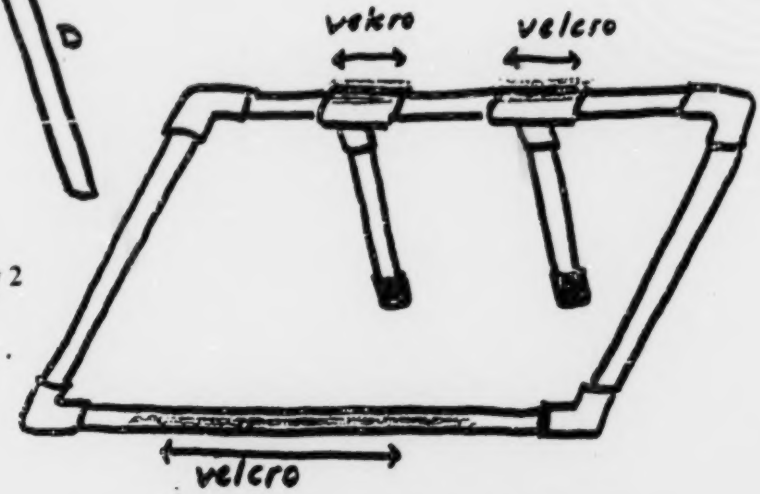
5. After the assemblies are completed, cement the two remaining pipe-ends and sockets and join the assemblies. Ensure that the pipes are bottomed in the sockets and rotate the legs until the stand is inclined about 45 degrees. Hold in that position until the cement sets.



Assembly 1



Assembly 2



Finished stand, ready to attach to Wolf

BOOK WITH POPSICLE STICK PAGE TURNERS

Materials

- ◊ 1 heavy cardboard children's book
- ◊ 1 popsicle stick per page of book
- ◊ All-purpose glue

Time required: 10 minutes
(Insert slide # MT 13)

Construction

1. Glue one popsicle stick to each page in a stair-step fashion; that is, the popsicle stick glued to the first page should be affixed so it will extend the furthest distance from the top, right-hand edge of the page. The next stick, to be glued to the second page, should be approximately one inch shorter than the first page's stick, and glued to the second page so that it is positioned just below the stick glued to the first page, in index tab fashion. The stick glued to the third page should be one inch shorter than the second page stick, and so on.

ADAPTED LAP TRAY WITH BOOK

Materials

- ◊ Lap tray (hard surface/cushion back)
- ◊ 1' of hook-and-loop velcro (sticky back)
- ◊ 2' of loop velcro (sew-on)
- ◊ 1 book

Time required: 15 minutes
(Insert slide # MT 14)

Construction

1. Cut the 2' strip of sew-on loop velcro in half and sew 1 piece to each side of the cushioned portion of the lap tray. This will be used to attach the tray to a feeder seat, chair, etc.

2. Stick the 1' strip of loop velcro horizontally to the hard surface of the lap tray.

3. Cut the strip of loop velcro to fit horizontally to both the front and back covers of the book.

4. The book should then easily stick to the lap tray so the child does not have to hold the book down.

ADAPTED VEHICLE

Materials

- ◊ Vehicle with wheels (such as a train)
- ◊ 1 pipe cleaner
- ◊ Hot glue gun and glue stick

Time required: 10 minutes
(Insert slide # MT 15)

Construction

1. Put a bead of hot glue on the rear end of the vehicle. Attach one end of the pipe cleaner to the glue and let it set.

2. Put a bead of hot glue on the front end of the vehicle. Attach the other end of the pipe cleaner to the glue and let it set.

POSITIONER

Materials

- ◊ 1 pair of child's tights
- ◊ 1 bag of fiberfill
- ◊ 1 twist-tie

Time required: 10 minutes
(Insert slide # MT 16)

Construction

1. Stuff tights with fiberfill until firm.

2. Close the open end of the tights by tying them in a knot or by using a twist tie.

VELCRO GLOVE

Materials

- 1 child's glove
- 1' of loop velcro (sew-on)

Time required: 20 minutes
(Insert slide # MT 17)

Construction

1. Cut the loop velcro into five 1/2 to 1" pieces (sized to fit the fingers on the gloves) and one 2 to 3" strip to fit on the palm of the glove.

2. Sew one of the small pieces of velcro to each finger of the glove and the longer piece to the palm. (Be careful to sew through only one layer of the glove fabric.)

3. Use pieces of hook velcro (sticky back) to attach toys the child likes to the glove.

CARPET SQUARE PLAY SET

Materials

- ◊ 1 tightly-woven carpet square with binding
- ◊ Selected toys
- ◊ Shoelaces
- ◊ Awl
- ◊ Hot glue gun
- ◊ Sturdy plastic straw (optional)

Time required: 20 minutes
(Insert slide # MT 18)

Construction

1. Attach toys to the carpet square in one of the following ways:

   a) With the hot glue gun, melt two holes in the toys. With the awl, poke two holes in the carpet square. Thread the shoelace from the underside of the carpet square up through one hole in the toy, down through the second hole in the toy, and then into the second hole in the carpet square. Tie the two ends of the shoelace together under the carpet square to secure the toy.

   b) Stick a strip of hook velcro to the toy in order to stick it to the carpet square.

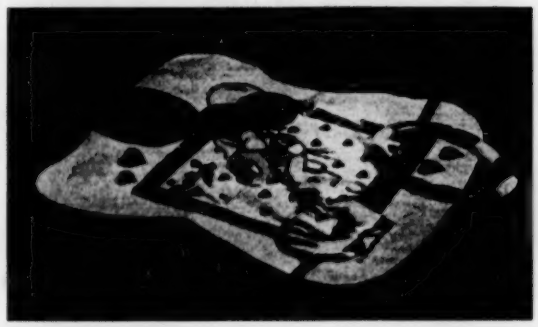
   c) For vehicles, cut a piece of sturdy plastic straw, and hot-glue it to the underside of the vehicle. Thread the shoelace through the carpet square, run it through the straw segment, then run it back down through the carpet square several inches away to create a "track" for the vehicle. To secure the toy, knot the shoelace underneath the carpet square.

BIB WITH TOYS

This will enable children to keep their hands on toys without dropping them on the floor.

Materials

- ◊ 1 bib with a pocket across the bottom
- ◊ 18" of elastic
- ◊ 1 needle
- ◊ Thread
- ◊ Children's toys (e.g., teething rings, colorful, lightweight toys, etc.)



Time required: 20 minutes
(Insert slide # MT 19)

Construction

1. Cut various lengths of elastic long enough to reach from the bib to the child's mouth. **Caution: Do not cut elastic long enough to wrap around child's neck**.

2. Sew one end of each elastic strip to the bib and tie the other end securely to a toy.

PICTURE TEETHING RING

This can be used as an early communication picture system or to teach receptive vocabulary.

Materials

- ◊ Teething ring with picture frames (Toys-R-Us)
- ◊ Favorite pictures

Time required: 5 minutes
(Insert slide # MT 20)

Construction

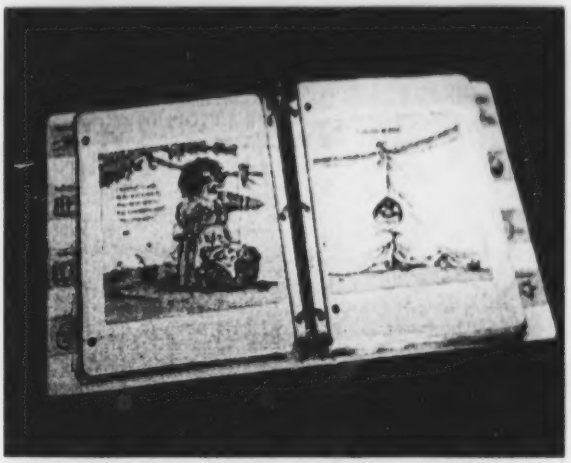
1. Remove the clear plastic and the existing pictures from the teething ring.

2. Insert the child's favorite pictures and then replace the clear plastic.

ADAPTED BOOK

Materials

- ◊ Three-ring binder (for standard, 81/2" x 11" paper)
- ◊ Sheet protectors (from office supply store)
- ◊ 1 piece of cardboard cut to fit inside each sheet protector
- ◊ 2 copies of the child's favorite book
- ◊ Communication symbols for book reading time
- ◊ All-purpose glue



Time required: 30 minutes
(Insert slide # MT 21)

Construction

1. Put 1 piece of cardboard inside each sheet protector.

2. After numbering the pages in each book, cut both books apart to separate each page.

3. In numerical order, slide each page of the book into both sides of each sheet protector (i.e., the first sheet protector will hold pages one and two; the second, pages three and four, etc.)

4. Glue the communication symbols chosen for book reading to the edges of the three-ring binder.

"SAY IT-PLAY IT"©

An Interactive, Voice-Output, Toy and Device Control System

Audio Arts Development Group (Sonny Johnston, M.S., CCC-A/SLP)

Materials

- ◊ 1/8" male to 1/8" female audio cable (Radio Shack # 42-2472)
- ◊ Crimping/Stripper Cutter-Pliers (Radio Shack)
- ◊ Aromat DS2E-M-DC 5V DPDT Relay (Newark Electronics)
- ◊ Small jeweler's Phillips screw driver
- ◊ Exacto blade or safety razor and scissors
- ◊ Hot glue gun
- ◊ Electrical tape
- ◊ Qualex Voice-Print (Qualex Corp.)
- ◊ Four 4" lengths of insulated 24-gauge solid strand wire (Radio Shack)

Time required: 1 - 2 hours

Construction

Voice-Print Preparation and Basic Adaptation:

1. Record a message following the instructions provided with your Voice-Print Recordable Picture Frame. After you have "played back" the message and are certain that it is working properly, *remove the ten small Phillips screws* from the picture facia portion of the frame. Place screws aside for later reassembly.

2. Flip the Voice-Print over onto its face. ***Note the small yellow paper tab*** extending through an opening on the back panel of the Voice-Print. This tab sometimes becomes flattened and stuck to the rear panel during shipping. In some instances, the tab has inadvertently been pulled away from its inner attachment points on the circuit board while "lifting away" the rear panel. Prior to removal of the rear panel, make

certain that the tab is free of obstruction and will freely feed through its opening and maintain its attachments to the inside circuitry. *Removal of the yellow tab will render the record function inoperable* and new recordings will be impossible (without replacement of the connected jumper wires).

A. **Hook a screwdriver point into one of the three mounting slots. Lift away the back panel** to expose the electronics housed inside the frame. Place the panel aside for later reassembly.

B. **Orient the frame** so that the speaker is situated at the upper right-hand corner and the small, square, tan-colored board housing the *play* switch button is located on the lower right-hand portion of the frame. Note that the switch board has two small wires attached to it. These two wires course to and from the electronics on the main circuit board and are the points of adaptation for the Voice Print. Typically, the units are manufactured with the outermost wire coded blue and with the wire that is situated toward the interior of the switch board coded green. If the wires supplied with your unit are colors other than blue and green, use the inner/outer designations.

C. **If you wish to adapt the frame solely for use with a standard adaptive switch,** all that is required is to splice each of two additional wires connected to a 1/8" female inline jack (Radio Shack item #274-284 with the wire attached or Radio Shack item # 274-283, which is a wireless jack) onto each of these two wires; then secure, tape, and reassemble. I recommend preserving the original Voice-Print "play" switch
connections to enable you to operate and record without an adaptive switch.

D. *To preserve the original connections and adapt the Voice-Print for use with an adaptive switch.* **cut the blue and green wires leading to the frame switch** approximately one half the distance from the main circuit board and carefully **strip 1/4" of insulation from each resulting wire end.** Be careful not to pull excessively on the blue and green wires, for this may break their connections to the circuit board and switch board.

E. While maintaining the color coding, **twist the original wire ends onto each of the new wire ends** to create two three-way connections (blue to blue with first new wire end; green to green with remaining new wire end).

Wire/Connector Preparation: The Say It-Play It

3. Four 4" lengths of 24-gauge wire will be required in order to connect the voice-print switch wires and an additional toy device cable to our DPDT relay.

   A. **Strip approximately 1/4 inch of insulation** away from each end of the four 4" wires. Remember to use the #20, #24, or smallest gauge opening on your particular wire stripper. I recommend solid copper insulated wire be used because this type of wire allows us to bend and

shape one stripped end of each wire into a tiny loop. Such loops will easily slide onto the small pins extending from the relay and will remain in place while soldering a more permanent connection.

B. **Bend one end of each wire to form a loop** (configure the loop into the shape of a cursive, lower case "L.")

4. Examine the **audio cable** to be used in this project (Radio Shack #42-2472). In this step we will measure, cut, and strip the wire to specified lengths. Note that the terminating ends of this cable are not identical. We will use the 1/8" male plug end and the majority of the attached wire to provide a cable for connecting adaptive toys and devices. The 1/8" female jack end will remain attached to a shorter length of cable and provides the input connection for an adaptive switch.

   A. **Measure eight inches** from the **female** 1/8" jack end of the cable and **cut**. This will provide appropriate lengths of wire for both the plug and jack segments of our cable. **Caution!** Make sure the **shorter** of the two resulting wires is the **female "jack" end**.

   B. We now have two separate lengths of cable complete with the appropriate ends. The cable consists of a gray vinyl sheath which encapsulates two 24-gauge wires (also referred to as conductors or leads). **Using the #12 gauge opening on the wire stripper portion of the cutter-stripper-crimping tool, remove one inch of the gray sheath from the cut ends of both cables.**

   C. The wires within the sheath are now exposed. Note that one wire forms a central core for the cable and has standard insulation. Wrapped around this center wire are many tiny wire filaments that are connected to one another at each end of the cable. This "shield" will provide our second wire, and all that is required for its preparation is to **twist the small wire filaments together to form a single wire**. Next, **using the #18 slot in the stripper, remove 1/4" of insulation from each insulated core wire.**

Connections and Assembly: See Figure 2

5. Locate and cut the frame **switch wire leads** as described in step 2C above. Each of these wires will be separately connected to an unlooped end on our **4" 24-gauge wires** as discussed in step 3. Wrap the splice connection with a small amount of electrical tape.

6. **Remove the relay from its packaging and position it on its back with the pins facing up.**

7. Careful inspection will reveal that each pin is numbered, beginning in the upper right-hand quadrant with **#1** and proceeding down the right-hand perimeter as **#4, #6,** and **#8**. While #2 appears embossed immediately below pin #1, you will note that there is no pin adjacent to this designation. The top left side of our relay begins with pin designation **#16,** skips #15, and continues downward with **#13, #11,** and **#9**.

8. Connections are made to relay pins by creating a small eyelet in the solid wire

end that will permit us to slide the opening down onto the pin shank. Carefully tighten the eyelet to secure its contact with the pin and then solder the connection. Since pins **6** and **11** are not used, you may bend them down flush with the relay case to gain better access to the other pins for soldering. *Make certain that wire connections do not contact adjacent connections.*

Relay connections are as follows:

Pin #1: Insulated wire from our short length of audio cable (the 1/8" female jack). Complete its connection below.

The bare stranded wire from this short cable connects to the positive (+) battery solder point designated (+) in Figure 2. The positive solder point is the innermost terminal.

Pin #4: Remaining end of one of the Voice-Print switch wire extensions (connects to blue or green wires, as described in step 5 above).

Pin #8 The other Voice-Print switch wire end extension (blue or green).

Pin #9: Bare stranded wire contained in the longer length of gray audio cable which terminates in an 1/8" male plug.

Pin #13: Insulated wire of long cable.

Pin #16: Stripped end of the last 6" length of 24-gauge cable. Complete the connections by attaching the opposite end of this wire as specified below.

The opposite end of the Pin #1 wire attaches to the negative (-) solder point on the battery contacts. The negative solder point is the outermost battery contact. Test the unit to ensure proper connections.

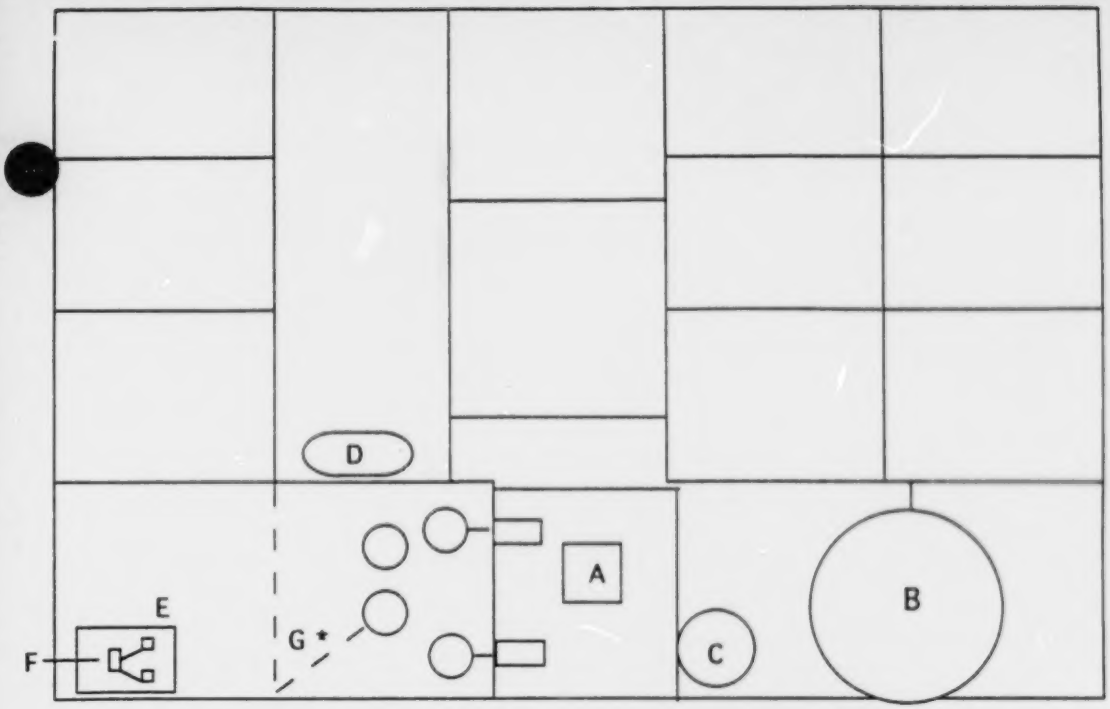
9. Refer to Figure 1. Notice the vertical support struts which surround the lower and side perimeters of the battery storage area. We will need to clip and remove these struts in order to have a deep depression within which to place our relay on its side and have space to position our additional wires. **Carefully** snip the attached ends of the struts and, using needle-nosed pliers, twist off the struts. Attempt to remove any excess material that may remain attached to the floor of the compartments.

10. Notch two small openings in the bottom of the frame adjacent to the frame switch to allow our 1/8" female jack and 1/8" male plug to exit from the card. Place all components and wiring into position and secure with hot glue. Replace bottom panel and secure with original screws.

Newark Electronics, Raleigh branch (919-781-7677)

Qualex Corp., 3404 North Duke Street, Durham, NC 27704 (919-383-8535)

Audio Arts Development Group, Route 1, Box 59, Highway 43 North, Greenville, NC 27834 (919-758-2240)



A = Circuit Board
B = Speaker
C = Microphone
D = Battery Drawer

E = Button Switch
F = Switch Contacts
G = Relay Location

* Cut out plastic where lines are dotted to create location for relay.

Figure 1

Say It - Play It Construction

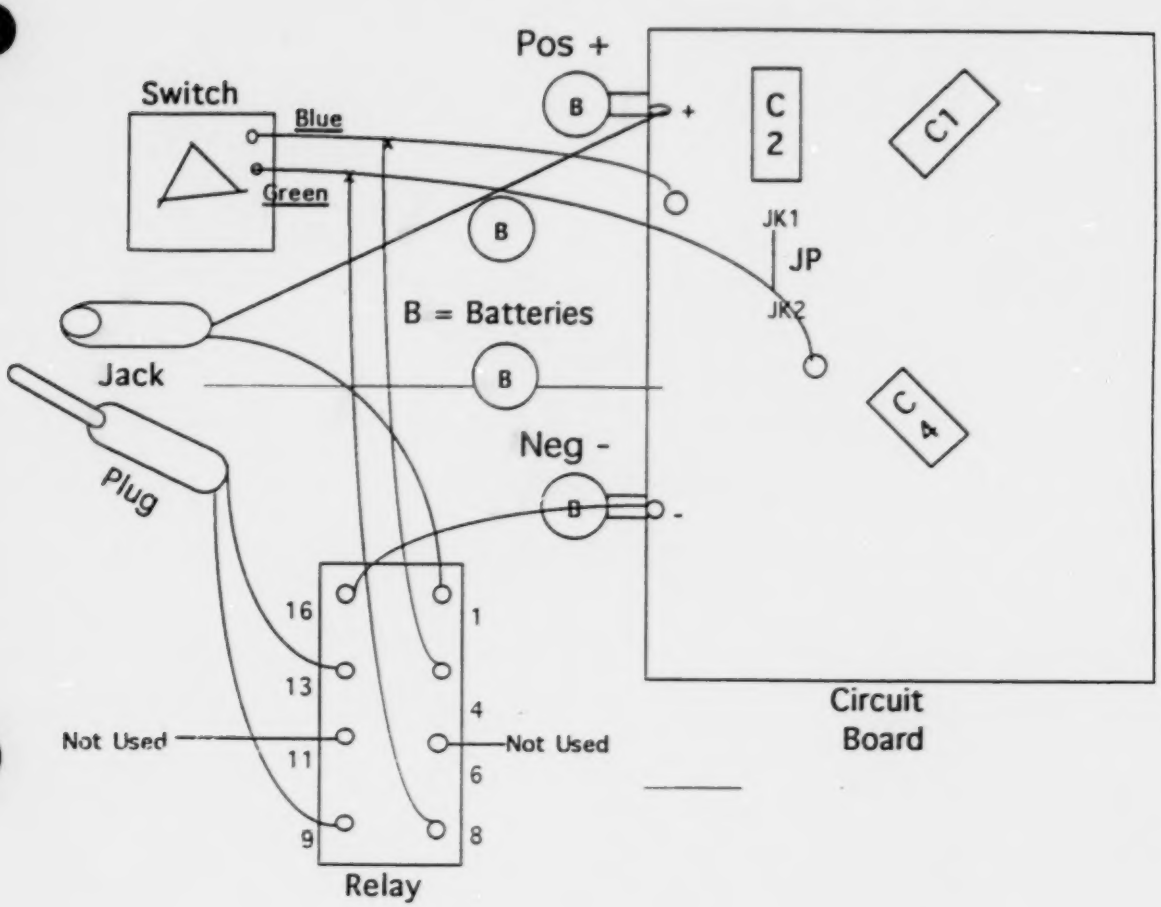
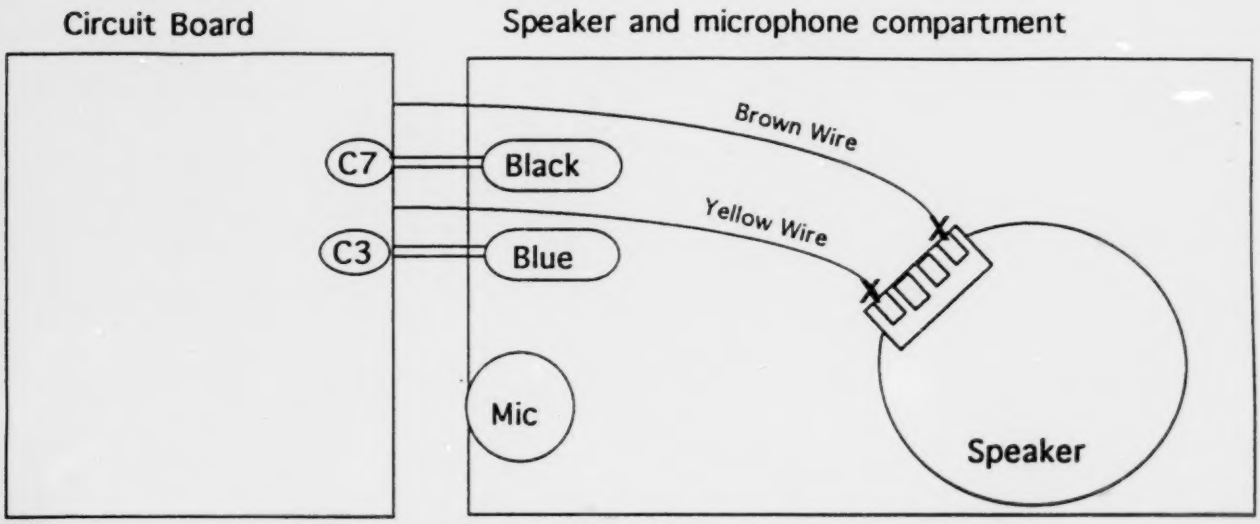


Figure 2

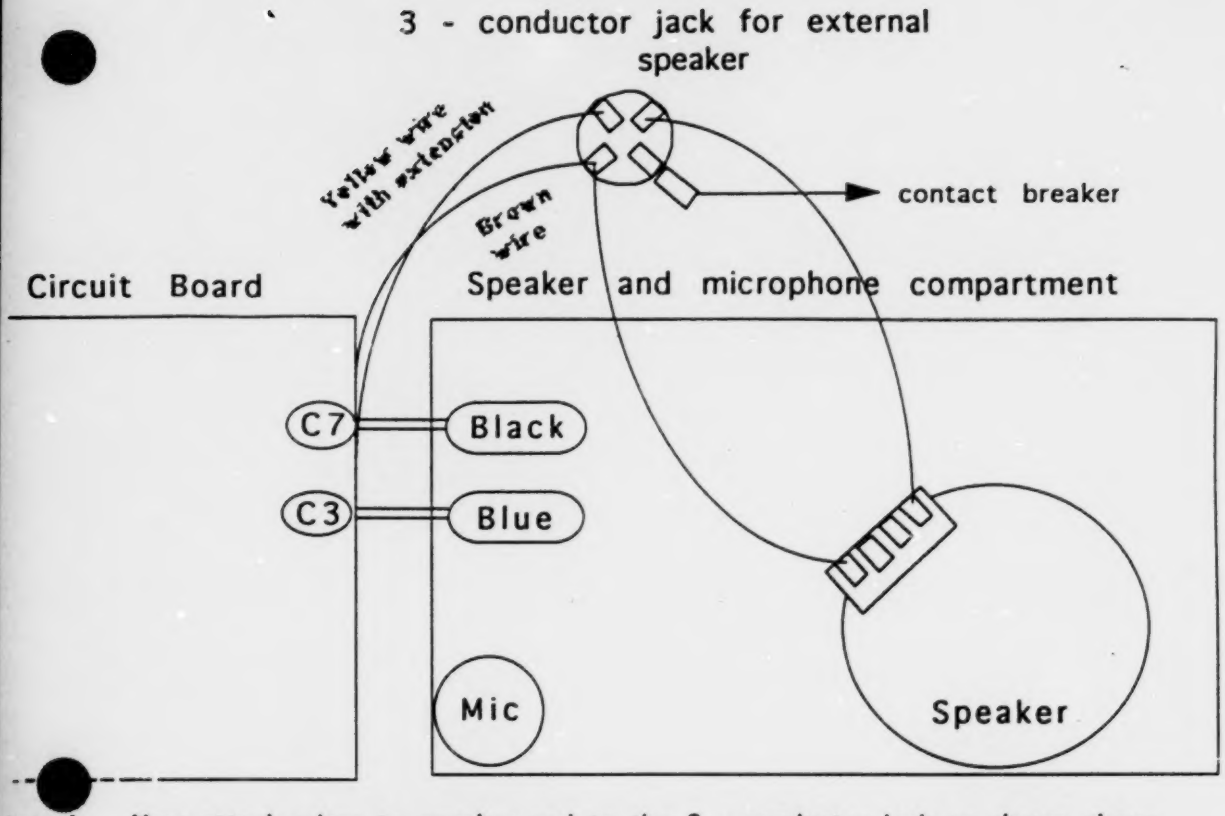
Attaching External Speaker to Say It - Play It

Step 1 of 2



Step 1: Snip brown and yellow wires by speaker (where x's are).

Figure 3



tep 2: Now attach wires to speaker and to the 3 - conductor jack as shown above. Use the contact breaker as your reference point. The contact breaker is the spring-like mechanism that separates from one of the prongs when a plug is inserted. It's the biggest component on that side of the jack - you really can't miss it.

Figure 4

RESOURCES

1. Information and Assistance Resources

2. Resource Materials

3. Additional Readings

INFORMATION & ASSISTANCE RESOURCES

1. National and North Carolina Assistive Technology Resources

2. Americans with Disabilities Act (ADA) Resource List

3. TADPOLE: North Carolina's Assistive Technology and Toy Lending Library

4. NCATP: North Carolina Assistive Technology Project Regional Centers & Consultants

5. North Carolina Resource Centers for Assistive Technology and Children - Birth to Three

6. Division of Maternal & Child Health, Dept. of EHNR, Developmental Evaluation Centers

NATIONAL ASSISTIVE TECHNOLOGY RESOURCES

The Alliance for Technology Access: 1128 Solano Avenue, Albany, CA 94709, 800 / 992-8111 (national network of community-based, non-profit technology resource centers).

Closing The Gap: P.O. Box 68, Henderson, MN 56044, 612 / 248-3294 (newspaper, resource directory, technology conference).

IBM Corporation Special Needs Systems, 800 / 426-2468 (IBM Independence Series products).

Trace Research and Development Center: S-151, Waisman Center, 1500 Highland Ave., Madison, WI 53705, 608 / 262-6966 (research and product development).

Worldwide Disability Solutions: Apple Computer, Inc., 20525 Mariani Ave., M/S 435, Cupertino, CA 95014, 408 / 974-7910 (referrals and information).

NORTH CAROLINA ASSISTIVE TECHNOLOGY RESOURCES

Carolina Computer Access Center, 700 E. Second Street, Charlotte, NC 28202-2826, 704 / 342-3004 (regional technology resource center, member of Alliance for Technology Access).

Carolina Literacy Center, Department of Medical Allied Health Professions,730 Airport Rd., Suite 200, University of North Carolina at Chapel Hill, Chapel Hill, NC, 27599-8135, 919 / 966-7486 (services and information for persons with severe speech and physical impairments).

Exceptional Childrens Assistance Center (ECAC), P.O. Box 16, Davidson, NC 28036, 800 / 962-6817 (parent advocacy and training).

Family, Infant and Preschool Program, 300 Enola Rd., Morganton, NC 28655, 704 / 433-2629 (Early intervention with computers, family support).

North Carolina Assistive Technology Project,1110 Navaho Drive, Suite 101, Raleigh, NC 27609, 919 / 850-2787, or call: Greenville - 919 / 830-8575; Winston-Salem - 919 / 761-2290; Charlotte - 704 / 355-2703 (state technology project funded under a grant from NIDDR, U.S. Dept. of Education).

North Carolina Augmentative Communication Association, P.O. Box 54, Bethania, NC 2701 (membership newsletter, conference).

Americans with Disabilities Act (ADA)
Resource List

- Easter Seal Society; 1993 edition of the Americans with Disabilities Act Resource - 13 page catalog of products and promotional pieces on the ADA; brochures, videotapes & audiotapes
- Project Access; (708) 390-8700) database of information on how to comply with ADA
- Job Accommodation Network; (800) 526-7234; extensive research on disability accommodations
- Equal Employment Opportunity Commission (EEOC); (800) 872-3362
- Disabilities & Business Technical Assistance Centers; (call 800/949-4232 for closest one); training and technical information regarding the meaning of the law
  - Southeast Disability & Business Technical Assistance Center, Atlanta, GA (800) 949-4ADA
- Office on the Americans with Disabilities Act, Civil Rights Division; U.S. Department of Justice, P.O. Box 66118, Washington, D.C. 20035-6118; (202) 514-0301-Voice, (202) 514-0381-TTY. (202) 514-6193 (Electronic Bulletin Board)
- The Disability Rights Education and Defense Fund (DREDF); (800) 466-4232; national law and policy center funded by the Justice Department
- Governor's Advisory Council on Technology for People with Disabilities; (800) 821-6922
- National Institute on Disability and Rehabilitation Research; (202) 732-5801, (202) 732-5316-TTY; provide variety of resources on employment & public accommodation

Local Resources:

- EEOC; (704) 563-2501
- Goodwill Industries; (704) 372-3434
- Programs for Accessible Living, Inc. (PAL); (704) 375-3977
- Vocational Rehabilitation Services; (704) 392-7398
- Opportunity Plus; (704) 376-4735 – employment agency for people with disabilities
- North Carolina Assistive Technology Project (NCATP); (919) 850-2787
- Carolina Computer Access Center (CCAC); (704) 342-3004 – computer access
- Metrolina Association for the Blind; (704) 372-3870
- Live Independently Networking Center; Newton, NC; (704) 465-8484, (704) 465-8369-TTY

ADA Books:

1. Implementing the Americans with Disabilities Act: Rights and Responsibilities for All Americans; Editors: Lawrence Gostin, and J.D. and Henry Beyer; Paul Brookes Publishing; $49
2. The ADA Mandate for Social Change; Editor: Paul Wehman; Paul Brookes Publishing; $32
3. Assistive Technology Sourcebook; Resna Press; Edited by Alexandra Enders & Marian Hall; Suite 700, 1101 Connecticut Ave., NW; Washington D.C. 20036; (202) 857-1199; $60; An extensive, comprehensive guide to assistive technology – for providers and users
4. Technical Assistance Manual & Resource Directory; EEOC; (704) 563-2501

Carolina Computer Access Center, 1994

T A D P O L E

North Carolina's Assistive Technology and Toy Lending Library

* Do you know any *families* of *infants or toddlers with developmental disabilities* (under age five) in *rural or under-served areas* of North Carolina?

* Do you know any *therapists or teachers* working with *infants or toddlers with developmental disabilities* (under age five) in *rural or under-served areas* of North Carolina?

* Do you *encourage* these families and professionals to *use assistive technology and toys* with the *infants and toddlers* they serve? Such as,

  - **adapted toys and switches**
  - **augmentative communication devices**
  - **off-the-shelf toys, puzzles and books**

TADPOLE loans any of its 600 assistive technology devices and toys to any family or professional serving any infant or toddler with a disability anywhere in North Carolina. TADPOLE pays all shipping costs!

1-800-852-0042 or (919) 231-8301

See enclosed brochure for details. Additional brochures available.

NORTH CAROLINA ASSISTIVE TECHNOLOGY PROJECT (NCATP)

REGIONAL CENTERS AND CONSULTANTS

SANDRA BALDWIN (Eastern Region)
Division of Vocational Rehabilitation Services
North Carolina Assistive Technology Project
2313 Executive Park Circle
Greenville, NC 27834
(919) 830-8575 (Voice/TDD)

SONYA VAN HORN (South Central Region)
Division of Vocational Rehabilitation Services
North Carolina Assistive Technology Project
1110 Navaho Drive, Suite 101
Raleigh, North Carolina 27609
(919) 850-2787 (Voice/TDD)

HARRIET FORBIS (North Central Region)
Division of Vocational Rehabilitation Services
North Carolina Assistive Technology Project
3333 Silas Creek Parkway
Winston-Salem, North Carolina 27103
(910) 718-1660/1661 (Voice/TDD)

BETH PIFER (Western Region)
Division of Vocational Rehabilitation Services
North Carolina Assistive Technology Project
Rankin Building, 1200 Blythe Boulevard
Charlotte, North Carolina 28203
(704) 355-2703 (Voice/TDD)

Assistive Technology Resource Center
Thoms Rehab Hospital, Inc.
68 Sweeten Creek Road
Asheville, North Carolina 28803
(704) 274-2400 Ext 4030 (Voice/TDD)
(800) 522-4080 Ext. 4030 (Voice/TDD)

North Carolina Early Childhood
Assistive Technology Resource Centers

NAME AND ADDRESS	PHONE NUMBER	FAX NUMBER
Developmental Evaluation Center 342 Penny Lane Concord, NC 28025-1216 Contact: Meg Lemelin	704 - 786-9181	704 - 792-9198
Early Communication Lab Western Carolina Center-FIPP 300 Enola Road Morganton, NC 28655 Contact: Linda Wortman Lowe	704 - 438-6503	704 - 438-6457
Gateway Education Center Greensboro Cerebral Palsy Association, Inc. 3205 East Wendover Avenue Greensboro, NC 27405-6433 Contact: Paula Justice	910 - 375-2575	910 - 621-1922
Developmental Evaluation Center East Carolina University Irons Building, Charles Blvd. Greenville, NC 27858-4354 Contact: Linzy Abraham	919 - 328-4480	919 - 328-4486
Lenox Baker Children's Hospital Duke University Medical Center 3000 Erwin Road (Box 3120 - DUMC) Durham, NC 27705 Contact: Robbin Newton	919 - 684-6669	919 - 684-3479
Thoms Rehabilitation Hospital 68 Sweeten Creek Road Asheville, NC 28803 Contact: Janis Bing	704 - 274-2400 Ext 4030	704 - 274-9452
Developmental Evaluation Center 1501 Dock Street Wilmington, NC 28401-4936 Contact: Mary Devoe	910 - 251-5817	910 - 251-2652

CHILDREN'S SPECIAL HEALTH SERVICES
APPROVED AUGMENTATIVE COMMUNICATION TEAMS
(ALPHABETICAL BY CITY)

NAME AND ADDRESS	PHONE NUMBER	FAX NUMBER
ASHEVILLE DEVELOPMENTAL EVALUATION CENTER 119 TUNNEL ROAD, SUITE D *ASHEVILLE*, NC 28805 ATTN: DONNA GERMANO, M.A., CCC-SLP	(704) 251-6091	(704) 251-6911
BOONE DEVELOPMENTAL EVALUATION CENTER 820 STATE FARM ROAD *BOONE*, NC 28607 ATTN: LISA HYPES, P.T.	(704) 265-5391	(704) 265-5394
CENTER FOR DEVELOPMENT AND LEARNING UNIVERSITY OF NORTH CAROLINA CB# 7255 BSRC-UNC *CHAPEL HILL*, NC 27599-7255 ATTN: MAGGIE SAUER, M.S., CCC-SLP	(919) 966-5171	(919) 966-2230
CONCORD DEVELOPMENTAL EVALUATION CENTER 342 PENNY LANE *CONCORD*, NC 28025-1216 ATTN: MARGARET LEMELIN, M.S., CCC-SLP	(704) 786-9181	(704) 792-9198
LENOX BAKER CHILDREN'S HOSPITAL 3000 ERWIN ROAD *DURHAM*, NC 27705 ATTN: KAREN CASEY, M.S., CCC-SLP	(919) 684-5702	(919) 684-3479
FAYETTEVILLE DEVELOPMENTAL EVALUATION CENTER 1211-A IRELAND DRIVE *FAYETTEVILLE*, NC 28304 ATTN: MARJORY CANNON, PT	(910) 486-1605	(910) 486-1590

NAME AND ADDRESS	PHONE NUMBER	FAX NUMBER
FAMILY, INFANT AND PRESCHOOL PROGRAM EARLY COMMUNICATION LAB 300 ENOLA ROAD *MORGANTON*, NC 28655 ATTN: LINDA WORTMAN LOWE, CCC-SLP	(704) 433-2731	(704) 438-6591
AUGMENTATIVE COMMUNICATION THERAPY, INC. 2301 REX WOODS DRIVE, SUITE 108 *RALEIGH*, NC 27607 ATTN: LAURA LEWIS, M.S., CCC-SLP	(919) 781-4434	(919) 781-5851
WAKE COUNTY SCHOOLS PROJECT COMMUNICATE 601 601 DEVEREUX STREET P. O. BOX 28041 *RALEIGH*, NC 27611 ATTN: GRACIE WILLIAMS, M.S., CCC-SLP	(919) 856-7766	(919) 856-8186
ROCKY MOUNT DEVELOPMENTAL EVALUATION CENTER 111 MEDICAL ARTS MALL *ROCKY MOUNT*, NC 27804 ATTN: KATHY L. MANNING, M.S., CCC-SLP	(919) 443-8858	(919) 443-0275
WILMINGTON DEVELOPMENTAL EVALUATION CENTER 1501 DOCK STREET *WILMINGTON*, NC 28401-4936 ATTN: STEPHEN A. BUNDY, Jr., DEC DIRECTOR	(910) 251-5817	(910) 251-2652

Revised 03/95

DIVISION OF MCH, DEPT. OF EHNR, DEVELOPMENTAL EVALUATION CENTERS

NAME OF CITY	PERSON AND ADDRESS	PHONE/FAX NUMBER	COUNTIES SERVED
ASHEVILLE	JOYCE GREENE, MPH, DIRECTOR DEVELOPMENTAL EVALUATION CENTER 119 TUNNEL ROAD, SUITE D ASHEVILLE, NC 28805	(704) 251-6091 (704) 251-6911	BUNCOMBE HENDERSON MADISON TRANSYLVANIA
BOONE	DOUGLAS B. GALKE, M.A., MPA, DIRECTOR DEVELOPMENTAL EVALUATION CENTER 820 STATE FARM ROAD, SUITE C BOONE, NC 28607	(704) 265-5391 (704) 265-5394	ALLEGHANY ASHE AVERY MITCHELL WATAUGA WILKES YANCEY
CHAPEL HILL	MELVIN D. LEVINE, M.D. DIRECTOR CENTER FOR DEVELOPMENT & LEARNING CB #7255 BSRC UNIVERSITY OF NORTH CAROLINA CHAPEL HILL, NC 27599	(919) 966-5171 (919) 966-2230	
CHARLOTTE	JOHN ELLIS, Ph.D., DIRECTOR DEVELOPMENTAL EVALUATION CENTER CENTER FOR HUMAN DEVELOPMENT 3500 ELLINGTON STREET CHARLOTTE, NC 28211	(704) 336-7100 (704) 336-7112	MECKLENBURG

NAME OF CITY	PERSON AND ADDRESS	PHONE/FAX NUMBER	COUNTIES SERVED
CONCORD	IRA PALMER, M.A., DIRECTOR DEVELOPMENTAL EVALUATION CENTER 342 PENNY LANE CONCORD, NC 28025-1216	(704) 786-9181 (704) 792-9198	CABARRUS IREDELL ROWAN STANLY UNION
CULLOWHEE	HOYT PONDER, Ph.D., DIRECTOR DEVELOPMENTAL EVALUATION CENTER WESTERN CAROLINA UNIVERSITY CULLOWHEE, NC 28723	(704) 227-7490 (704) 227-7142	CHEROKEE CLAY GRAHAM HAYWOOD JACKSON MACON SWAIN
DURHAM	SARAH BOLOGNESI, BSN, DIRECTOR DEVELOPMENTAL EVALUATION CENTER BULL CITY BUSINESS CENTER 115 MARKET STREET, SUITE 201 DURHAM, NC 27701-3221	(919) 560-5600 (919) 560-3018	DURHAM FRANKLIN GRANVILLE ORANGE PERSON VANCE WARREN
ELIZABETH CITY	GREGORY A. MICHAEL, D.ED., DIRECTOR DEVELOPMENTAL EVALUATION CENTER P. O. BOX 189 ELIZABETH CITY, NC 27909	(919) 338-4044 (919) 338-4365	CAMDEN CHOWAN CURRITUCK DARE GATES HERTFORD PASQUOTANK PERQUIMANS TYRRELL WASHINGTON
FAYETTEVILLE	ANN CRANE, M.S., DIRECTOR DEVELOPMENTAL EVALUATION CENTER 1211-A IRELAND DRIVE FAYETTEVILLE, NC 28304	(910) 486-1605 (910) 486-1590	BLADEN CUMBERLAND HARNETT HOKE ROBESON SAMPSON

NAME OF CITY	PERSON AND ADDRESS	PHONE/FAX NUMBER	COUNTIES SERVED
GREENSBORO	BETSY A. CARRIER, MSW, DIRECTOR DEVELOPMENTAL EVALUATION CENTER 122 N. ELM ST. SUITE 400 SELF HELP PUBLIC INTEREST CTR. GREENSBORO, NC 27401	(910) 334-5601 (910) 334-5657	ALAMANCE CASWELL GUILFORD RANDOLPH ROCKINGHAM
GREENVILLE	DEWANE FRUTIGER, M.A., MPH DIRECTOR DEVELOPMENTAL EVALUATION CENTER EAST CAROLINA UNIVERSITY IRONS BLDG. CHARLES BLVD. GREENVILLE, NC 27858-4354	(919) 328-4480 (919) 328-4486	BEAUFORT BERTIE GREENE HYDE MARTIN PITT WAYNE
MORGANTON	J. JAMES HAWLEY, M.A., DIRECTOR DEVELOPMENTAL EVALUATION CENTER 517-E WEST FLEMING DRIVE MORGANTON, NC 28655	(704) 438-6263 (704) 438-6088	ALEXANDER BURKE CALDWELL CATAWBA MCDOWELL
NEW BERN	NEWSOM WILLIAMS, Ph.D., DIRECTOR DEVELOPMENTAL EVALUATION CENTER 1405 S. GLENBURNIE ROAD NEW BERN, NC 28562	(919) 514-4770 (919) 514-4773	CARTERET CRAVEN JONES LENOIR ONSLOW PAMLICO
RALEIGH	TIMOTHY PRITCHARD, CPM, DIRECTOR DEVELOPMENTAL EVALUATION CENTER 319 CHAPANOKE ROAD, SUITE 101 RALEIGH, NC 27603	(919) 662-4600 (919) 662-4473	CHATHAM JOHNSTON LEE WAKE

NAME OF CITY	PERSON AND ADDRESS	PHONE/FAX NUMBER	COUNTIES SERVED
ROCKY MOUNT	MAXINE WARREN, ACSW, DIRECTOR DEVELOPMENTAL EVALUATION CENTER 111 MEDICAL ARTS MALL ROCKY MOUNT, NC 27804	(919) 443-8858 (919) 443-0275	EDGECOMBE HALIFAX NASH NORTHAMPTON WILSON
SHELBY	ALLEN GREENE, MSW, DIRECTOR DEVELOPMENTAL EVALUATION CENTER PROFESSIONAL CENTER NORTH 804 NORTH LAFAYETTE STREET SHELBY, NC 28150	(704) 480-5480 (704) 480-5440 FAX (704) 480-5477	CLEVELAND GASTON LINCOLN POLK RUTHERFORD
WADESBORO	KENT HAYWOOD, MSW, DIRECTOR DEVELOPMENTAL EVALUATION CENTER 107 EAST ASHE STREET WADESBORO, NC 28170	(704) 694-5186 (704) 694-7803	ANSON MONTGOMERY MOORE RICHMOND SCOTLAND
WILMINGTON	STEPHEN A. BUNDY, JR., M.A., DIRECTOR DEVELOPMENTAL EVALUATION CENTER 1501 DOCK STREET WILMINGTON, NC 28401	(910) 251-5817 (910) 251-2652	BRUNSWICK COLUMBUS DUPLIN NEW HANOVER PENDER

NAME OF CITY	PERSON AND ADDRESS	PHONE/FAX NUMBER	COUNTIES SERVED
WINSTON-SALEM	DONALD GOLDSTEIN, Ph.D., DIRECTOR DEC, BOWMAN GRAY SCHOOL OF MEDICINE AMOS COTTAGE REHABILITATION HOSPITAL 3325 SILAS CREEK PARKWAY WINSTON-SALEM, NC 27103	(910) 765-9916 (910) 716-4204	DAVIDSON STOKES DAVIE SURRY FORSYTH YADKIN
	SATELLITE CLINICS		
ROCKINGHAM	KENT HAYWOOD, MSW, DIRECTOR DEVELOPMENTAL EVALUATION CENTER 110 S. HANCOCK, SUITE 200 ROCKINGHAM, NC 28379	(910) 997-9240 (910) 997-9115	
HICKORY	JIM HAWLEY, M.A., DIRECTOR DEVELOPMENTAL EVALUATION CENTER 3314-12 16TH AVENUE, S.E. CONOVER, NC 28613	(704) 466-5594 (704) 466-5598	

Revised 11/95

RESOURCE MATERIALS

1 Project Tech IT Easy Resource List

AbleNet Inc.

KAYE Products Inc.

Jesana Ltd.

Don Johnston Developmental Equipment Inc.

Toys R Us

Toys for Special Children

Adapt ABILITY

Radio Shack

ADAMLAB

Constructive Playthings

Project Tech IT Easy Resource List

Company Name	Ordering #/Name	Cost
Ablenet, Inc. 1081 Tenth Avenue, SE Minneapolis, MN 55414		
Battery Device Adapter	For AA or C & D Batteries	7.50
Big Red® Switch	Big Red	42.00
Jelly Bean® Switch	Jelly Bean	42.00
Light Touch Switch	L.T. Switch	52.00
PowerLink 2®	PowerLink	150.00
Universal Switch Mounting System	US Mounting System	185.00
KAYE Products, Inc. 535 Dimmocks Mill Road Hillsborough, NC 27278		
Teen Bean™ Support Pillow	The Teen Bean™	40.00
Jesana Ltd. P.O. Box 17 Irvington, NY 10533		
Clear Clock Communicator	8C6060 BMA	90.00
Don Johnston Developmental Equipment, Inc. P.O. Box 639 1000 North Rad Road, Building 115 Wauconda, IL 60084-0639		
Circle Time Tales™	J65	95.00
Switch Latch/Timer		137.00
TOYS R US 3300 Westgate Drive Durham, NC 27702		
©Disney Animal Sounds Merry Go Round	143022	26.99
©Disney Dream Time Carousel		16.99
©Disney Melody Lights-go-round		17.99
©Disney Watch Me Talk Mirror		29.99
Crib Light		10.99
Fisher-Price® First Touch Tape Player	939099	29.99
Giant Bubble Gun	367397	7.99
Listen & Learn ™ Nursery Rhymes Ball		19.99
My First Words	075302	19.99
Picture Frame Teether	343382	3.99
Playskool® Rockin' Radio	109029	9.99
Playskool® Twinkle Time Nursery Rhymes	939099	29.99
Playskool ® Talking Animal Keyboard		34.99
Pop 'N Spin Top	500178	12.99
Sesame Street® Garage	424838	19.99
Shelcore® Musical Teething Key Ring		5.99
Todays Kids® Gymfinity		36.99

Toys for Special Children 385 Warburton Avenue Hasting-On-Hudson, NY 10706		
Cheap Talk 4 (Switch Module)	1394	45.00
Dome Alone	69	45.00
Fan	120	16.00
Glitter Roll Music Box/Switch	696	65.00
Lighted Sensory Plate/Switch	886	50.00
Perceptual Motor Trainer	1130	36.00
Pinch Switch	800	21.00
Pudgey Piglet	312	25.00
Ring Around Bells	23	65.00
"Say It" 5 x 8 Switch	1395	40.00
Shadow Talker 4	1396	110.00
String Switch	1080	19.00
Talking Rocking Switch Plate	1398	50.00
Tape Recorder	390	51.00
The Ultimate Switch w/clamp	1671	65.00
Tilt Switch	990	19.00
Vertical Wobble Switch	1070	41.00
Vibrating Pillow	460	26.00
AdaptABILITY® P.O. Box 515 Colchester, CT 06415-0515		
Maroon Spoon (pack of 10 small)	10257	6.99
Nosey cut-out glass	22054	2.79
Rectangular pad 10" x 14"	24345	16.45
Teaspoon	21143	3.85
Weighted Fork	21252	8.65
Radio Shack Division of Tandy Corporation Fort Worth , Texas 76102		
1/8" Inline Phone Jacks	274-333	1.69
1/8" Phone Jacks	274-249	1.59
1/8" Phone Plugs	274-287	1.49
100 ft 22 Guage Speaker Wire	278-1385	9.99
12VDC PC Relay	275-249	3.99
9-Volt Battery Clips (5)	270-325	1.39
AC Power Adaptor	273-1652B	10.99
Invisible Beam Intrusion Sensor	49-551	37.95
Mercury Switch	275-040	1.29
Mini Magnetic Reed Contact Switch	49-497	3.99
Normally Open Magnetic Contact Switch	49-533	5.99
30W Soldering Gun	64-2066	5.49
PK 2 Mini Plug	274-286	1.49
SMini Spot Lever	275-016	1.99
SMini Spot Roller	275-017	2.19
Submini Plug Adaptor	274-328	2.99
Tape Recorder Foot Switch	44-610	3.99

ADAMLAB **Wayne County RESA** **33500 Van Born Rd.** **Wayne, MI. 48184**		
Lynx	7002 01	250.00
HAWK	7002 02	175.00
Constructive Playthings **1227 East 119th Street** **Grandview, MO 64030-1178**		
Mess and Play Tray	CPX1031	10.00

ADDITIONAL READINGS

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Rockville, MD 301-897-5700

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6201 Candle Court
Eldersburg, MD 21784

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6201 Candle Court
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6201 Candle Court
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P.O. Box 639, 1000 N. Rand Road, Building 115
Wauconda, IL 60084 312-526-2682

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Birmingham, AL 35234

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Portland, OR 97207-1008 800-234-6006

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P.O. Box 3358 2875 Cedar Mill Crossing
Park City Utah 84060 Acworth, GA 30101

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202 East Earll Drive, Suite 140
Phoenix, AZ 8501-2636 602-266-5976

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